Planning Skills

Questioning Techniques

**Republic of Zambia
Ministry of Education**

School-Based
Continuing Professional Development
(SBCPD)
Through Lesson Study

Teaching Skills Book

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Discussion Facilitation

Lesson Approaches

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Preface

The School-Based Continuing Professional Development (SBCPD) is one of the effective ways of improving education as far as teaching is concerned as it targets self development, group and eventually institutional development.

Teaching is fundamentally a process of human interaction. In spite of the availability of several materials that could be provided for teaching and learning, it would still call for a teacher who is skilled in teaching. The teaching profession can be rewarding and worthwhile only if the teacher has skills to reach the child's 'heart' while teaching.

A skilled teacher provides an opportunity to develop the students thinking skills and thinking strategies which is a foundation for thoughtful learning. The teacher with good teaching skills is usually the teacher with high esteem.

Enhancing the teaching skills is not only desirable in the interest of teaching the child, but also essential for sharpening ones' personal development and each other's in issues pertaining to professional development (CPD).

The Teaching Skills Book is aimed at not only providing appropriate teaching skills, but also to deepen the teachers€knowledge and skills using the experiences based on the School Based Continuing Professional Development project.

The Ministry remains supportive to such type of a programme that enhances teachers' skills and development. Therefore, as users of the skills book it is hoped that the book will be put to good use in improving the teaching skills for practicing teachers at all levels as well as everyone taking professional development training.

The Teaching Skills Book is based on the experiences of the School Based CPD and therefore designed to benefit the key stakeholders such as teachers, facilitators and others who implement school based programmes.

The Ministry of Education is confident that once this book is put to good use, it will greatly benefit the users.

Dr. Buleti G. Nsemakila
Permanent Secretary
MINISTRY OF EDUCATION

Contents

Acronyms

ASEI	Activity, Student Centred Experiment and Improvisation
CE	College of Education
CIPP	Context, Input, Process, Products
CPD	Continuing Professional Development
DEBS	District Education Board Secretary
DESO	District Education Standards Officer
DEST	District Education Support Team
DRC	District Resource Centre
DRCC	District Resource Centre Coordinator
EO-TED	Education Officer, Teacher Education Department
ESO	Education Standards Officer
FW	Facilitators' workshop
GRACE	Grade Meeting at Resource Centre
HIM	Headteacher's In-service Meeting
HOD	Head of Department
HOS	Head of Section
ISTC	In Service Training Centre
JICA	Japan International Cooperation Agency
JOCV	Japan Overseas Cooperation Volunteers
JTC	Joint Technical Committee
MOE	Ministry of Education
NEST	National Education Support Team
PDSI	Plan Do See and Improve
PEO	Provincial Education Officer
PESO	Principal Education Standards Officer
PEST	Provincial Education Support Team
PRC	Provincial Resource Centre
PRCC	Provincial Resource Centre Coordinator
PTA	Parents Teachers Association
SBCPD	School Based Continuing Professional Development
SESO	Senior Education Standards Officer
SIMON	School In-service and Monitoring
SMARC	Subject Meeting at Resource Centre
SMASE	Strengthening of Mathematics and Science in Education
SMASTE	Strengthening of Mathematics, Science and Technology Education
SPRINT	School Program of In-service for the Term
SW	Stakeholders' Workshop
TED	Teacher Education Department
TESS	Teacher Education and Specialised Services
TGM	Teachers Group Meeting
WECSA	West, East, Central and Southern Africa
ZAME	Zambia Association for Mathematics Education
ZASE	Zambia Association for Science Education
ZATE	Zambia Association for Technology Education
ZEST	Zone Education Support Team
ZIC	Zone In-service Coordinator
ZRC	Zone Resource Centre

How to use this book

The Ministry of Education in May 1996 developed a National Policy of Education (Educating Our Future). This document has among other things a mission statement and the goals of the education system in Zambia.

Mission Statement

The mission of the Ministry of Education is to guide the provision of education for all Zambians so that they are able to peruse knowledge and skills, manifest excellence in performance and moral uprightness, defend democratic ideals, and accept and value other persons on the basis of their personal worth and dignity, irrespective of gender, religion, ethnic origin, or any other discriminatory characteristics

Ministry of Education (1996) *Educating Our Future*

It is also stated in the policy that, based on our mission, the first goal of the Education System is to produce a learner capable of:

i. *Being animated by a personally held set of civic, moral and spiritual values;*

ii. *Developing an analytical, innovative, creative and constructive mind;*

iii. *Appreciating the relationship between scientific thought, action and technology on the one hand, and sustenance of the quality of life on the other;*

iv. *Demonstrating free expression of one's own ideas and exercising tolerance for other people's views;*

v. *Cherishing and safeguarding individual liberties and human rights*

vi. *Appreciating Zambia's ethnic cultures, customs and traditions, and upholding national pride, sovereignty, peace, freedom and independence;*

vii. *Participating in the preservation of the ecosystems in one's immediate and distant environments;*

viii.   Maintaining and observing discipline and hard work as the cornerstone of personal and national development

In both the mission statement and the goals, we see the type of teaching and learning expected to be offered to a Zambian child. The noticeable gap, however, is that the teachings of most of the lessons in Zambia are conducted in a traditional way of "chalk and talk" as well as teacher-centered method.

The challenge we have now is to help the teachers and educators realize the need to develop their teaching strategies which will uphold the policy. More emphasis of the goal and mission is put on the learners to take responsibility of their own learning. A teacher is challenged to develop a reflective approach and align their lessons with the goals of the Ministry of Education. At every moment we need to ask ourselves what is it we are developing in the mind of the learners and for what use.

With this in mind and based on the School-Based Continuing Professional Development (CPD) experiences, this teaching skills book has been developed to be used by teachers and educators to help them understand and develop learner-centered lessons. It is a compilation of the contents which have been introduced in the workshops held in Central Province under School-based CPD programme started in 2006.   In the long run followed by series of lesson study and implementation in class,it is hoped that the teachers will come up with proper strategies of leaner-centered teaching and learning as there is no clear position on this matter in Zambia. Also worth noting is the fact that the learner-centered learning varies from country to country and culture to culture. It is envisaged that, in the long run, Zambia will be in the position to define its own learner-centered teaching and learning through our effort for developing better lessons for the pupils.

Therefore, this book can be used;
   ☐ At school by teachers and school managers to improve the lessons through lesson study and other school-based CPD activities.
   ☐ At workshops or meetings by educators and teachers to share the information and knowledge on good lesson and teaching skills.

PART I

GOOD LESSON AND EFFECTIVE TEACHING SKILLS

1. Good Lesson and Bad Lesson

What is a good lesson and bad lesson? How can you define it? It is very difficult to state it in a word because the definition of good and bad changes with conditions and points you take into account. However, there are basic features world wide which could help us align a lesson as either being good or bad. This chapter explains the features of good and bad lesson which might be useful for the teachers to improve the lessons toward good lessons.

1.1. Lecture and Lesson

There tends to be confusion between a Lecture and a Lesson among educators. Before we look at a Good and Bad Lesson, there is need to differentiate between a Lecture and a Lesson

a. Lecture
This is teaching and learning;
- Where a teacher is a provider while the learner is a recipient
- Involving one-direction flow of information
- Effective on explaining

b. Lesson
The is a form of teaching and learning;
- Were a teacher is a Facilitator/Guide while the learner is the main Actor/Beneficiary
- Which has several-direction flow of information
- Effective on mutual learning

A lesson should have a certain flow if it is to attain its objectives. This flow in a lesson is usually categorized into Introduction, Development and Conclusion. Basically each lesson should have these three components. The basic components of a lesson and their features are:

i. Introduction (I)
- To motivate learners on specific topic
- Usually 5-10 minutes at the beginning

ii.   Development (D)
- To deepen the learning through questions, discussions and activities
- Usually 20-30 minutes

iii.   Conclusion (C)
- To conclude/assess what was learnt
- Usually 5-10 minutes

1.2. Features of Bad Lesson

The writing of lesson plans varies from teachers to teacher. The table below is a

sample of introduction and a part of development in a science lesson, which has been written following the standards format of lesson planning . The tasks for the teacher and those for a leaner have been written in the table. In its form, it looks like the flow of the lesson is properly written, however, we still consider it to be a bad lesson. What could be bad about it?

Sample Lesson Flow (Lesson A) --- Environmental Science, Topic Oxidation

STEP (Time)	Teaching/Learning Activities	Points/Remarks
Introduction (5 min)	-Teacher asks pupils to state names of metals -Teacher asks pupils if those metals can be burnt. -Teacher shows that steel wool can be burnt. -Teacher tells pupils that steel wool can be burnt because it is cut very tin and wools are exposed to the air.	Teacher shows some samples of metal objects.

Development (25 min)	Activity 1: Change of the mass
	  1. Put learners in groups
	  2. Give them activity sheet and materials
	  3. Let them start working in groups for checking the change of mass of steel wool before and after burning
	  4. Group secretaries report
	  5. Consolidate the points and correct answers
	      (Omitted below)
		Teacher will help group which can not perform well.

The following features make the above lesson to be considered as a bad lesson;

(a) Explanations are written in the view of teaching
When we analyze the teaching and learning activities in Lesson A, we see that all the statements are written in the view of teaching such as Teacher tells, Teacher asks and Teacher shows. Statements starting with a word of "Teacher" show the frame of mind of the writer. In this type of lesson,the teacher might take the center stage instead of the pupils being given priority.

(b) No pivotal question before activity
There is need to develop questions that would foster thinking on the mind of the learners. These questions are known as "pivotal questions". They are sometimes derived form the objectives set in a lesson. In the above Lesson A, such questions are not there, hence making it difficult to provoke the thoughts of the learners. The learners might end up being passive – during the lesson

(c) Pupils may not know why they have to do that activity
While it is appreciated that teacher put an activity in Lesson A, however, since there is no pivotal question; one would wonder as to why the learners are doing an activity. An activity in a lesson should be meant to help learners

understand a concept. In the above lesson, the learners are following procedure with no emotional attachment to it. This hinders their hidden potential of further independent thinking. There is need to address the affective and psychomotor domain in the learner.

1.3. Features of good lesson

The Lesson B below has been written following the standards format of introduction, development and conclusion using a similar format and topic with Lesson A. The tasks for the teacher and those for a leaner have been written in the table. This lesson could be considered to have been is properly written as a good lesson or better lesson than Lesson A. What could be good about it?

Sample Lesson Flow (Lesson B) --- Environmental Science, Oxidation

STEP (Time)	Teaching/Learning Activities	Points/Remarks
Introduction (5 min)	<u>Do you think we can burn steel wool?</u> -Most of pupils think steel wool can not be burnt -Pupils are surprised at seeing steel wool is burnt easily.	Let pupils have interest in the activity

Development (25 min)	<u>If we burn steel wool, will the mass become lighter or heavier?</u>
	-Most of pupils say it becomes lighter.
	-Some pupils says no change
	-Some says become heavier
	-Pupils are asked to discuss why they think so.
	Activity 1: Change of the mass
	  1. Put learners in groups
	  2. Give them activity sheet and materials
	  3. --------
	       (Omitted below)
		Give time for thinking well. Vote for the answer, if necessary Pupils should be motivated by the prior discussion.

The following features make the above lesson a good lesson;

(a) Explanations are written in the view of learners.
The analysis of the teaching and learning activities shows that the statements in Lesson B are written in the view of learners. They explain how learners may think or react to the teacher's question. The pupils are given the priority in the lesson. The learners take the center stage instead of the teacher taking priority.

(b) Pivotal question enables pupils to have predictions and discussions before on activity.
The above lesson sample has two questions;

1. Do you think we can burn steel wool?
2. If we burn steel wool, will the mass become lighter or heavier?

These questions are pivotal questions deliberately and intentionally put in the lesson in order to provoke the thoughts of the learners. Through out this lesson, the learners can be interested in the lesson, as they will be trying hard to prove or demystify what they think. The deliberate discussion on the two questions will create a good reason for conducting a successful practical activity

(c) Pupils may conduct activity with interest

In Lesson B, the activity is not just a time in which teacher instructs pupils to do. It is intentionally put as a way of proving pupils thoughts provoked by the prior pivotal question. If we put the activity like this in a lesson, pupils can conduct the activity with an interest to find their answer. Conducting the activity itself should not be an objective in a lesson. It should be a tool to support or develop the thoughts of pupils.

Comparing the sample lesson A with B, we can have an overview of the difference between good lesson and bad lesson; however, this could be an important part of the features of defining a good lesson. Other factors which might influence the goodness of lesson are described in the later part of this book.

1.4. Teacher-centered and Learner-centered Lesson

The mission of the Ministry of Education is to produce a leaner that is able to:
1. peruse knowledge and skills,
2. manifest excellence in performance and moral uprightness,
3. defend democratic ideals,
4. accept and value other persons on the basis of their personal worth and dignity, irrespective of gender, religion, ethnic origin, or any other discriminatory characteristics

For these to be achieved, we need to develop the abilities and skills in the learners in the school as we teach. The mandate of the education system and a teacher in particular has to come up with strategies on how they could develop lessons that would help achieve the mission. The lesson developed by the teachers need to be anchored on the four mission areas stated above.

At this stage, one would take a reflection on most of the lessons being offered in Zambian schools and subject them to the 4 mission statement areas of the ministry of Education. We would safely say they are not meeting these as most of them are examination oriented lessons, in other words they are based on transmissive approach which put focus on the transfer of knowledge from teacher to pupils. But is this what Zambia requires? If the lessons are aligned in the mission statement, those learners who get squeezed out of the education system might have gained skills that would be used at their levels. This would strengthen the technical and vocation skills level as we are all aware that not all Zambians can get into "white

collar" jobs.

As we saw in lesson A and B, most teaching in Zambia might be what we would consider as teacher-centered similar to lesson plan A. Very few if any lessons plans are written in the learner-centered like lesson plan B. This shows that there is a gap between the ideal lesson and the real Zambian lesson.

The challenge we have now is to change the lessons written in the view of teaching into those written in the view of learning, if the mission of education is to become a reality.

To realize this, there is need to:
- practice lesson study for in-service teachers
- change the way the teachers colleges of Education are teaching would be teachers
- take a critical look at how the lessons are being written by the teachers
- orient the teachers on the mission and goals of the education system

Also at school level, teachers need to be challenged to change their teacher-centered lessons to learner-centered lessons through:
- CPD activities including lesson study to have "more understandable" and "more enjoyable" lesson for the pupils
- Learning knowledge and skills for better planning and teaching using this book
- Introducing the way of writing lesson plans in view of learning, including some pivotal questions and time for pupils discussions

The lessons should be changed from the view of teaching to that of learning. When such is done in the long run the teachers will be in the position to define the Zambian version of the learner-centered lesson which we are currently not having.

2.   Plan – Planning of Lesson

2.1. How to make a teaching plan (unit plan)

The basic requirements for making to a teacher plan include syllabus, schemes of work teaching and lesson plan when will take a look at these in this chapter.

2.1.1. Syllabus, Schemes of work, teaching and lesson plan.

a. *Syllabus*

This is an outline of the aspects of a particular subject that will be covered for a particular course of study. The syllabus gives guidance on;

(i)   what the learners will have achieved (measurable skills, knowledge, values, application of principles etc.) by the time they complete the course.
(ii)   the nature of the examination,
(iii) number of papers and questions to be set and the total mark for each.
(iv) the teaching time for the whole course in periods per week

It must be noted that a good syllabus must be achievable and appropriate for the age and ability of the learners for whom it is intended.

b. *Schemes of work*

It is more detailed than the syllabus. It contains what is to be taught and how it is to be taught. It provides for teaching –learning activities the students and teachers will be engaged in. Furthermore, it gives the type of the teaching-learning materials, and the textbooks to be used. It teacher's guarantee that he /she knows what is ahead. It is also a pupil's guarantee that the syllabus will be dealt with in an orderly and balanced way.

To achieve this it is important when drawing the schemes of work for the teacher should bear in mind the following:
- The age of the pupils and their abilities. This will help the teacher to scale down the vocabulary used and the type of teaching –learning materials.
- The size of the class. This is important where group work will be used. Additionally, it helps the teacher to determine the adequacy of the teaching – learning materials.
- Sequencing. Which subject content should come first, and which one follows and when such content could best be taught
- How the planned work fit in with the work learners are doing in other subjects.
- The time allocated at each level in the subject.

c. *Teaching plan*

From the schemes of work, a more focused plan can be drawn for a given unit indicating the specific objective(s), time allocation, and the approach that will be used to teach. This is not a lesson plan but a unit plan. The time allocated to each

objective may depend on;
- the approach used in lessons
- number of pupil activities
- complexity of the subject matter (the degree of helping learners may require)
- whether or not learners will work in groups , individually, and so on.
- learners' abilities

So, in writing the teaching plan (unit plan), be clear with the;
- number of periods (lessons) which can be used for the unit/content.
- concept/ contents you have to cover in that content
- approach(es) to each period (whether or not the approaches will be mixed or not and in what arrangement if they are mixed)

It is at this point that the teacher will come up with a clear approach and variety of teaching with value.

2.1.2. Sample of Teaching plan for a Unit

Content: 1.3 Mass & Weight (3 periods)

#	Objectives from Syllabus	Approach taken in lesson
1.3.1	Explain that mass is a measure of the amount of ----	Mastery-Learning (ML) Approach
1.3.2	Explain the concept of weight	Inquiry-Discovery (ID) Approach
1.3.3	Demonstrate understanding that two weights ---	
1.3.4	Use appropriate balances to measure-	
1.3.5	Determine centre of mass of an object	Problem-Solving (PS) Approach
1.3.6	Describe the effect of the position of centre of mass	

Sample Teaching Plan for Environmental Science

The table above is an example of a teaching plan drawn from the schemes of work on a specific unit of mass and weight. The demand of each objective from syllabus is weighed and time is allocated. Furthermore a suitable approach or approaches are arrived at. (*see how pivotal questions are phrased for each of the approaches in section 2.2.5*)

From the teaching type of plan, it will be easy then to prepare a lesson plan and think well ahead about the pivotal questions for each component of the lesson such as **I**ntroduction, **D**evelopment and **C**onclusion. What needs to be taken into consideration are:-:
- a consistent flow of thought for learning series of lessons,
- a consistent flow of thought considered from the view of learners and

- adequate time allocated to each period of lesson based on weight of content

It is a clear fact now that there is a difference between a teaching plan and lesson plan. Whilst the teaching plan shows the outlines of content and approaches to be employed, the lesson plan is a detailed step-by-step description of how a particular lesson will progress in order to achieve the lesson objectives.

2.2. How to write a lesson plan

If the teacher's time with the learners is to be used effectively, the teacher need to plan carefully for each lesson- taking into account how learners learn, the requirements of the curriculum, the most appropriate method of teaching the topic and the resources available, as well as the evaluations of previous lessons.

A lesson plan is a detailed step-by-step description of how the lesson will progress in order to achieve the lesson objectives and has the following features:-
- a guide for teaching
- a base for Lesson Study
- shows ability of the teacher(s)
- takes a variety of formats

Lesson plans may take a variety of formats but, which ever format it should have the following components.
- Title of Lesson Plan (Subject)
- Name of Teacher
- Name of School
- Grade
- Date & Time of the Lesson
- Duration
- Class used for demonstration
- Topic & Sub-topic
- Rationale (Background)
- Objectives
- Pre-requisites
- Resources & Materials
- References
- Lesson Process (usually shown as a table)
- Method for Assessment
- Remarks

This chapter will intend to take a look at areas of the following: Rationale, Lesson, Objectives, Pre requisite skills and knowledge, Pivotal questions Approaches, Introduction, Lesson development, Conclusion and Evaluation as key issues on writing lesson plan.

2.2.1. Rationale

Rationale or Background is a justification or the significance of the lesson. It is the general statement that broadly emphasizes the applicability of and usefulness of the contents of the lesson to the learner either in the present or in the future. The rationale, therefore, affords the teacher an opportunity to see why the lesson must be taught. Furthermore, it shows how the teacher understands the knowledge and skills to be taught in the lesson.

The four basic components of the rationale are:

(a) **Content** - outline of what is to be taught and learned in a lesson
(b) **Concept/value** –outline of why the lesson should be learned
   i.e. the direct relevance of the lesson to our everyday life/experiences or the misconception(s) the lesson is intending to correct. It is important not to include matters that might confuse and overwhelm learners. It must be borne in our minds that the learners tend to ask, "why are we learning this?€35 silent or overt ways. The rationale therefore the lesson should address this question in a reasonable way.
(c) **Methods** – approaches or strategies that will be used to deliver the lesson, and how the lesson objectives will be attained with that approach.
(d) **Location of the period(s)** - out of the total number of planned periods for teaching a particular unit, where is this lesson located.
   i.e. 3rd period of 11 lessons for the teaching unit of energy

Here is a sample description for rationale of a biology lesson teaching "vertebrate".

An example of Rationale in a lesson plan:
(a) In this topic, pupils will learn the basic knowledge for classifying animals in terms of the types of foods they are eating.
(b) Through the observation and practice of classifying, it is expected that the pupils will get respects on the complexity of animal body and the way of evolution for adjusting their environment
(c) In this lesson, using discovery approach I intend to let the pupils find the differences on the shape of the teeth
(d) This lesson is the 5th period of the 8 lessons for teaching the topic of "Vertebrate".

2.2.2. Lesson objectives

These are specific statements which set out what pupils are expected to learn from a particular lesson in a way that allows the teacher to identify if learning has occurred. Objectives should be feasible and attainable by all learners. They should also be written in a behavioural way so that teacher and pupils are able to find if they had been attained in a lesson. The four key points for writing behavioural objectives are A. Audience, B. Behaviour, C. Conditions and D. Degree of Proficiency.

a. Audience

This part of the objective points out to whom the objective is intended. In our case the audience of a lesson should be a learner/learners. Objective of the lesson should be written like, "The pupils will be able to….", "Students will be able to …….".

b. Behaviour

The students' behaviour which is expected to be seen as a result of the lesson can be stated as either being overt or covert. Overt means being observed directly (visible, audible), while covert means not being observed directly (mental, invisible, cognitive). We also need to write a statement that describes main intent or performance you expect of the learner. In addition to using observable words for writing objectives, we can add an indicating behaviour to the objective by which the main performance can be known, if the performance happens to be covert.

> Example:
> - ... be able to add numbers (write the solutions) written in binary notation.
> - ... be able to identify (underline or circle) misspelled words on ….

c. Conditions

To state the objectives clearly, you sometimes have to state conditions you will impose when children are demonstrating their mastery of the objectives like, "Given a list of ……", or "With the data of …".

you can ask questions below to yourself as a guide to your identifying conditions.
- What will the learner be allowed to use?
- What will the learner not be allowed to use?
- Under what conditions, will you expect the desired performance?

d. Degree of Proficiency (Performance Level)

You will need to state acceptable level of performance for the objective, if necessary. This usually appears as time limit, accuracy or quality of the performance which the teacher expects the learners to have.

E.g. "Pupils will be able to finish ten (10) simple decimal calculations in 30 seconds.

2.2.3 Pre-requisite skills and knowledge

This component states what learners are already able to do or know before this lesson. It could be drawn from the objectives of previous lessons. In other words it outlines the concepts that need to be mastered in advance in order to accomplish the lesson objectives.

2.2.4. Pivotal question

Learners have different experiences and natures. It is important to remember that

every learner "knows" something about the topic to be learned. However, he or she may not realize this initially and may even deny it. Some of this prior knowledge may be correct; and some of it is correct but incomplete; and some of it is only partially correct; and some of it is simply wrong. Nevertheless all attempts to learn something new will be built on the foundations provided by that old "knowledge," right or wrong.

The role of the teacher is to help the learner to learn and, therefore, he or she should create situations where learners investigate what is to be learned as a problem to solve by posing and answering questions, discussing and sharing insights, trying out ideas, using concrete models and so on.

The teacher's starting point is that of asking a key and searching question, the pivotal question. This is because a **pivotal question enables pupils to have prediction and discussion before an activity.** It introduces, motivates pupils' discussion or discoveries and clarifies major ideas.

Teachers should be mindful to ask questions in a way that engages the learners. The responses to the questions will:

- enable the teacher know the existing misconceptions so that he or she will help learners correct existing mental models.
- help the teacher plan activities that will help learners correct their mental models.
- enable teacher organise and present new materials in a way that can be most appropriately related to the old knowledge.
- It will also help the learner to seek clarifications.

Therefore, pivotal questions should be:
- related to the major objectives or parts of the lesson.
- written in advance in a lesson plan
- followed by several emerging questions

2.2.5. Approaches

Pupils learn in different ways and different areas of learning require different approaches. Teachers need to take into account such differences in planning lessons and to demonstrate that we can use a range of teaching methods in order to take account of such differences. The paradigm shift proposed world over is a shift from teacher-centered lesson to learner-centered lesson. It is considered that learner-centered lesson requires teachers to use variety of approaches to realize active learning of pupils.

Active learning does not mean:
- merely pupils being involved in an activity.
- Pupil actively participating in class

But active learning means that:
- Pupils have some responsibility for the development of the activity
- Purposeful interaction with ideas, concepts and phenomena (can involve reading, writing, listening, working with tools, equipment and materials etc.
- reflection upon both action and results of an action

it encourages :
- problem solving skills
- promotes development of process skills
- autonomous learning
- higher order skills
- cooperative learning and not competitive learning
- confidence in the learner to question some statement or to seek clarification.

The method requires learners to be
- self motivated
- self disciplined

Although there are so many approaches used in a lesson delivery in the world, the following are some of the main approaches available to make our classroom setting an opportunity for active learning. Additionally, examples of pivotal questions for each approach have been cited. (*Refer to the teaching plan in section 2.1.2. above*)

a. **Mastery-Learning Approach (ML***)*
   Used for explaining a particular topic or directing certain activity. It allows learners to explain so that an assessment can be made as to whether they have mastered the topic properly.

   *Pivotal Questions for Lesson (ML Approach**)*
   (I) Mass is defined as ……………
   (D) Let's try to measure the mass of some objects.
   (C) Please check if your group could have measured the correct
   masses of objects.

b. **Inquiry-Discovery Approach (ID)**
   Used for letting learners find new concept through discussion or activity. It is intended to motivate learners on certain topics. Pivotal questions should be asked to lead learners into an activity. The learners should be allowed to conclude what they have found/discovered.

   Pivotal Questions for Lesson (ID Approach)
   (I) Are there any differences between the mass and weight? Why?
   (D) How will the weight and mass change, if we take the objects to the place of different gravity?
   (C) What did you find on the difference between weight and mass?

c. ASEI/PDSI Approach (AP)

Used for making learners experience a series of practical works (hands and minds-on activities). These are used as tools for learning and understanding. The teacher takes the role of a facilitator.

(I) What will happen if I blow air between the two
(D) What caused the change
(C) Explain how a plane flies

d. Problem Solving Approach (PS)

Giving main problem to learners and letting them to find the best/better solution on it. During and at the end of the activity the learners interact with the teacher and among themselves. They are allowed to discuss and make conclusions on their findings. The teacher takes the role of a facilitator.

Pivotal Questions for Lesson (PS Approach)

(I) Which truck do you think is more stable? Why? (pictures of differently packed trucks drawn)
(D) Here are two shapes of board. Using this material, how can you determine the center of mass of the board?
(C) How can we explain the effect of the position of center of mass?

Although the approaches seem to stand out, they should be mixed depending on;

- the difficulty of contents
- level and interest of learners
- availability of learning materials

Teacher needs to structure his/her interactions with the learners and amongst learners. This could be enhanced by:

- o *think –pair –share* paradigm . In this approach, a question is posed for class and the learners are asked to first individually generate an answer to the question and then turn to the neighbour and discuss their answers and agree on a joint answer. The teacher then solicits representative answers from the class.
- o *nearest neighbour* problem solving. The problem is put to the class and learners are asked to work in small groups of neighbours to solve the problem. The answers are solicited and discussed by the entire class.
- o *peer instruction* .Each learner is asked to select an answer for the question, and then convince the neighbour that his /her answer is correct.

2.2.6. The introduction.

It may involve one activity whose purpose is to revisit prior knowledge and to provide an informal experience with and encourage interest in, new learning. Furthermore, it provides a break between activities that that have just been completed (e.g., a prior class) and the activities that are about to take place. The introduction is usually short, perhaps lasting five minutes, although it can be longer, depending on the activity. It is important to think how you are going to tie the

lesson objectives with learners' interests and past classroom activities.

2.2.7. Lesson development.

The purpose of this stage is to develop what is to be learned in depth and is needed to propel development. It is a coherent collection of several activities, where each activity develops what is to be learned in a different way. Five essential characteristics should be noted, being:

- provides a single clear focus (the lesson should focus clearly on the outcome and only involve other matters that have direct relevance to that outcome.)
- supports problem solving climate of learning
- answers the question of " Why are we learning this?" (the lesson should address this question in a reasonable way.)
- it provides multiple- learning contexts (several different activities should be used to develop the outcome.)
- assess teaching. (Were objectives achieved? What went well? What need s to be addressed next time? How are individuals responding?) Active instruction is pursued.

2.2.8. Conclusion

The lesson closes with a plenary session in which the teacher draws out key points. It is here where learning is reviewed and there is an opportunity to reflect on the learning process. Pupils do most of the work. They are encouraged to explain what they have learned and how it can be used in the future, perhaps in other lessons.

2.2.9. Evaluation/assessment/assignment

This section focuses on whether the learners have arrived at their intended destination. The lesson objectives can be evaluated by collecting and assessing learners' work, asking questions and listening to the answers. Furthermore, learners can provide comments for the entire lesson (including time, management, difficulties, achievements of lesson objectives and areas that need improvement.

2.3. Preparation of teaching materials

One might ask him/ herself as to what makes an idea difficult to teach and /or to learn? The following may be advanced:
The 'noise' of other ideas (concepts) that surround it.
But the children who are taught these concepts may have to face noise when they have to pick out the concept relevant to what is being taught or when they are being asked to apply concepts, picked from out of the noise, to solve a given problem.
Good teachers do not allow 'noise' to interfere with the formation and understanding of concepts.
Concepts may be complex in themselves.
Many aspects tie up together to form the concept. The different aspects have to be

worked together to use the concept fully. For example, the concept of *volume* has three aspects; Length, breadth and height. Failure to understand an aspect(s) in a concept reduces the learner's grip on the understanding of the whole concept.
The task you perform on the idea is one dimension of difficulty **others are**

-Failure to form the concepts clearly
-Ability to repeat back or to classify correctly, but without full understanding.
-Inability to paraphrase
-Failure to apply the concepts

Based on these and other factors, it is very important to think seriously on the choice of teaching and learning materials. Why?

2.3.1. Improvised teaching materials

Our national curriculum requires learners to acquire inquiry and problem solving skills. To develop the skills, an emphasis is being placed on not only minds –on but also hands- on activities. However due to inadequate and in some cases a complete lack of conventional tools and materials worsened by large class sizes, improvisation is employed.

The key questions we need to ask ourselves are:
* Will the materials chosen be adequate for the class size?
* Will the materials chosen convey the same ideas/results as the conventional one?

While the use of improvised materials cannot be regarded as a panacea to all ills, but it contributes to meaningful learning and positively change learner's attitude towards hands – on activities. There is however need to in-service teachers on how to use local environment as a resource in teaching and learning of school subjects.

This shift does not relegate the teacher to some minor supporting role but these approaches do define new roles for the teacher. These may include:
* supporting the learner to learn,
* coordinating the activities,
* being a mentor or a facilitator of student learning efforts
* being an evaluator of student performance and learning.

It must be clear however that this approach and roles are not without challenges. The most prevalent challenge cited are:
* How will I cover all the necessary content? This statement reflects two concerns. First, that the content the learners should be exposed requires more time than may be available. Secondly, €f3 4don't cover everything, learners will not be prepared for the examination or for the next grade level. Also implicit in this challenge are the assumption that " if I don't say it in class, learners won't 'get it'" ; and " learners will ' et it€ß1 tell them about it in class€35

- Learners may resist this approach largely because they believe that the teacher should tell them what they need to know to pass the exam.
- our reluctance as teachers to adopt a new mind set. This reluctance is not surprising. Teachers have always known to "give" knowledge and the learners "receive" knowledge. Our role models in the classroom have operated under this premise and this is what we have been trained to do. Therefore adopting a new mind set requires that we challenge our experience.

2.3.2. Plan for chalkboard

The chalk board is one of the teacher's frequently used resource and therefore adequate planning for its use is necessary. A well planned chalkboard makes work easy to follow. Pupils find it easy to follow the flow of the lesson and therefore it enhances classroom interaction. Poor chalkboard use can stand in the way of learners to meaningful learning. The following points are the key of using chalkboard: for effective chalk board management

(i) Do's
- erase the writing on the chalkboard in an up and down flow.
- divide the chalkboard in equal and sizeable spaces
- Start writing from the far left going to right
- Draw a magine line at the far left of the chalkboard
- Put the date on the far top right
- Put the subject, topic and title of the lesson (be orderly)

(ii) Don't
- use water to clean the board
- write on top of other writings
- overly use coloured chalk
- Jumble the writing on the board

3. Do - Conducting a lesson

This entails actualizing the planned activities for a specific level in a specific subject area for a stipulated period of time. The smooth flow of these activities largely depends on how the intended learners get engaged through questioning.

3.1. Questioning Techniques

Asking questions is a fundamental part of;
(i)   finding information;
(ii)   persuasion;
(iii)   engagement;

Questioning techniques are learned capacities on effective ways of asking. For any question to be effective, it **must** be;
(i)   short;
(ii)   clear;

3.1.1. Categories of teachers' questions

Through the art of thoughtful questioning, teachers can extract not only factual information, but also lead learners in;
- connecting concepts;
- making inferences;
- increasing awareness;
- encouraging creative and imaginative thought;
- aid critical thinking processes;
- help learners explore deeper levels of knowing, thinking and understanding;

The main categories of teachers' questioning are;
- factual or closed;
- convergent or guided;
- divergent or open;
- evaluative or critical;

a. Factual
Soliciting reasonably simple and straight forward answers based on obvious facts and awareness usually at the lowest level of cognitive or affective processes. Answers are frequently either right or wrong.
> Example; name the main actor in the book 'Things fall apart' .

b. Convergent
Questioning within a very finite range of accuracy.
> Example; how is light important to people on Earth?

c. Divergent
These questions allow learners to explore different avenues and create many

different variations and alternative answers and scenarios. Correctness may be based on logical projections, basic knowledge or imagination.

Example; What could have happened to the Zambia way of life if Frederick Chiluba had lost elections in the 1991?

d. *Evaluative*

Questions which require sophisticated level of cognitive and/or emotional judgment. Learners combine multiple logical thinking processes before arriving at a synthesized information or conclusion.

Example; Why and how might manufacturing industries be related to calamities such as floods?

3.1.2. Blooms taxonomy and questioning

Benjamin Bloom (1956) developed a classification/ taxonomy of levels of intellectual behavior in learning in order to aid how learners' intellectual potentials could be developed. There are three domains; the cognitive, psychomotor, and affective.

a. *Cognitive domain*

The Intellectual capability, which is *knowledge*, or 'think€31

b. *Affective domain*

Feelings, emotions and behaviour, which is *attitude* or 'feel'

c. *Psychomotor domain*

The manual and physical aptitudes, which is *skills*, or '*do*'

During the 1990's: a new group of cognitive psychologist, led by Lorin Anderson (a former student of Bloom), updated/revised the taxonomy. Two changes were made;

- From Noun to Verb Forms (reason being that learning is an active process).
- The top two levels are essentially exchanged from the Old to the New version.

d. *Previous version of Taxonomy in Cognitive Domain (from lower to higher)*

- Knowledge
- Comprehension
- Application
- Analysis
- Synthesis
- Evaluation

e. *New version of Taxonomy of Cognitive Domain (from lower to higher)*

- Remembering
- Understanding
- Applying
- Analyzing
- Evaluating

▪ Creating

The knowledge category was replaced with the word *remembering* (a category of thinking). Knowledge is an outcome or product of thinking not a form of thinking *per se.* Similarly, comprehension and synthesis were retitled to *understanding* and *creating* respectively, in order to better reflect the nature of the thinking defined in each category. The cognitive domain is divided into two levels parts;

- Lower level (Lower Order Thinking - LOT)
- Higher level (Higher Order Thinking - HOT)

As is clearly stated under categories of teachers' questions, it is plainly evident that questioning plays a vital role in developing learners' thinking capabilities in all subjects.

Questions that fall within the lower levels promote lower order thinking skills in learners while those that fall under the higher levels foster higher order thinking skills. Undoubtedly, lower level questions restrict the potential within learners to think analytically, critically and creatively. This, however, does not imply lower level questions are not important.

f. Remembering
This is recalling information; recognizing, naming, listing, reviewing and describing.
- **Questions for remembering**
  Who is a president of …?
  Who discovered…?
  How old was…?
  What is the definition of…?

g. Understanding
This is explaining ideas or concepts; paraphrasing, explaining, classifying and interpreting.
- **Questions for understanding**
  Why vehicles need fuel?
  What is negative acceleration?
  Which description matches with…?

h. Applying
This is using information in another familiar way; using, implementing, and carrying out.
- **Questions for applying**
  Where can we find an example of …?
  How would you carry out …?
  In what situation can we use…..?

i. Analyzing
The learner breaks learned information into its parts to explore understands and relationships; comparing, organising, deconstructing, outlining, finding, structuring and integrating.

- **Questions for analyzing**

What do you see as other possible outcomes?
Can you explain what must have happened when...?
What are some of the problems of...?
Can you distinguish between...?

j. Evaluating

The learner makes decisions based on in-depth reflection, criticism and assessment; checking, hypothesising, critiquing, experimenting, judging, testing, detecting, monitoring.

- **Questions for evaluating**

Judge the value of....
What changes to.. would you recommend?
How effective are. ..?
What are the consequences..?
What influence will....have on our lives?
What are the pros and cons of....?

k. Creating

The learner generates new ideas, products, or ways of viewing things; designing, constructing, planning, producing, inventing, devising and making.

- **Questions for creating**

Can you design a...to...?
Can you see a possible solution to...?
How many ways can you...?
Can you create new and unusual uses for...?
Can you develop a proposal which would...?

3.1.3. Dos and don'ts on questioning

A single question can swing a class in hive of meaningful activities or plunge it into a hostile whole. This should serve as a constant reminder to people entrusted with class facilitation.

a. Dos on questioning

These are things a teacher needs to bear in mind to help effecting learning to flourish in any given situation.

- Answer learners' questions adequately. This encourages learners to be confident of their thoughts and generates an urge to ask more questions.
- As much as possible ask open ended questions. It promotes critical thinking necessary for unlocking the enormous potential within the learners.
- Ask questions that are commensurate to learners' capabilities.
- Ask questions that are related to unit under discussion or have bearings to learners environment.
- Admit when you do not know an answer to a learner's question. This builds confidence in learners and ignites their passion to engage in research.
- Praise good responses appropriately. Learners become aware of benefits of participating in discussions and begin to feel appreciated in their contributions.

- Correct inappropriate questions.
- Engage in active listening (attentive and undistracted listening) when learners are giving responses. It encourages learners to think deeply of what they are saying.
- Ask other learners to comment on a response before you do. This ensures wider participation which brings out divergent views on a particular topic.
- Rephrase a question only after the "wait time" if no responses are coming forth. Wait time is time interval within which learners engage in processing the question as they prepare to respond. This time is roughly 25 seconds. Rephrasing a question accords learners an opportunity to understand it better.
- Ask clearly - worded questions and speak clearly. It has the ability to put learners in an unclouded mental state and aids logical thinking leading to easiness.
- Draw learners' concentration before asking a question preferably creating a short moment of silence. This prepares both the teacher and the learner for the respective tasks.
- Give learners time to think about the asked question. Mental processes require some time to take effect.
- Acknowledge learners' contributions.

b. Don'ts on questioning
- Do not interpret learners' answers to suit your own.
- As much as possible avoid questions with only one answer or 'yes' or 'no'. this stifles learners potential to think critically, analytically or creatively.
- Never ask multiple questions within a short period of time. This has a destructive potential of denying learners chance to engage the mental processes properly leading to failure to offer meaningful and intelligent responses.
- Never joke on learners on learners' answers or comment in a sarcastic manner. This makes concerned learners become fluttered and consequently lose concentration.
- Never create an environment where only the fastest learners get to speak. This puts off the low attainers leading to "drifting away" .
- Do not treat learners' questions as stupid. The only stupid question is that which is never asked.
- Do not ask when learners are not ready. This may cause divided attention yielding undesirable discomfort.
- Do not postpone answering learners' questions unless when the answer is complex and requires enough time.

3.2. Delivering skills

Imparting relevant skills and knowledge is a fundamental idea in teaching and learning processes. The skills and knowledge meant for the learner is carried on the ' hòw'' plate. Mannerisms and technical know how are crucial in ensuring effective delivery of skills and knowledge.

3.2.1. Talking as a teacher

As a class teacher you will need to have your personal and communication skills. In particular, the listening skills, the questioning skills, the ability to give complex and difficult explanations and your ability to end classes effectively.

a. *Listening effectively*
- Try to keep an open mind and listen to what is actually said.
- Listen for meaning. For example a learner may be asking you a muddled question about a small detail. Actually, what s/he may be telling you is that s/he is completely lost and doesn't understand this at all.
- Try not to pre-empt what a learner is saying, by cutting them off mid-question and giving them an answer to a problem as you see it. As much as possible, let them explain their uncertainties and confusions. Concept development often requires that learners first understand how the new ideas presented fit on to what they already know, and if the new concept requires them to let go of some previous understanding, this needs to be actively acknowledged (you can't simply overlay a new and contradictory set of ideas before the old ones have been explored and deconstructed).
- Try to find a workable balance between, on the one hand, thinking ahead in the discussion in order to maintain the flow and focus and, on the other, being overly directive and directing the discussion along your set path.

b. *Questioning skills*
There are a number of techniques you can use to encourage learners to ask questions and to open up discussion. The most obvious is to draw on students' questions and comments and to enlarge upon them with your own remarks. In a totally new situation; starter learners, you may want to jot down several statements or questions beforehand and use these as a springboard.

If you choose to use a direct questioning approach it is sensible to think through what you will do when a learner cannot answer your question or gives incorrect response. It is likely to fall to the teacher to 'rescue' the situation and in some circumstances to help re-build the confidence of an embarrassed or flustered learner. Because of these potential difficulties it is, therefore, suggested that you do not ask individual students to answer your questions so directly until you have established a good rapport with your class and you have got to know your learner better.

c. *Giving a clear explanation*
The first piece of advice here is to try not to do too much explaining in class. You can not explain more than you know! This may sound a little strange but it is all too easy to be drawn into the trap of giving mini-lectures rather than facilitating learning. However, there are times when your learners will look to you to help in clarifying points.

In giving a clear explanation you should start from where your learners are. You

may choose to summarise "what we know already" or indeed ask one of the students to do this task, or in group. There are four quick tips to help structure your explanation:

- structure what you say so that you have a clear beginning, middle and ending;
- signpost your explanation to make the structure clear to everybody;
- stress key points; and
- Make links to the learners' interests and current understanding. You can do the latter through the use of thoughtful examples, by drawing comparisons and by using analogy.

d. *Ending classes, with prompt to future study*

Getting the timing of a class right can be a challenge to most teachers. There is inevitably pressure on time, as many classes try to "do" as much as possible in the time available. Finding that time has simply run out is a common experience. With that in mind, it is useful to plan the end of sessions as carefully as planning the beginning, and then to watch the clock so that you can decide when the "end game" needs to start. Obvious elements in "ending" that many class teachers include are;

- To summarise the ground that has been covered, key learning points, or main issues raised. This can give a sense of "neatness" and closure to sessions. As such, you may wish to consider ways of using the summing up more as an opportunity to identify any "gaps" or issues that haven't been addressed, key readings which you, may be, have noted students have not yet read, but probably would benefit from spending time on.
- To see it as an opportunity to prompt students to further study. Rarely will a class manage to "complete" the topic under discussion prompting giving students some pointers as to further work they may engage with. Finally, it is often worth prompting students to plan ahead, to make links to the next lesson and next class, and ensure that everyone is on track to make the most of the next class in the series.

3.2.2. Organizing pupils answers and activity

Handling learners' responses to questions and setting the stage for an activity play crucial roles ranging from building good relations, boosting learner confidence, freeing learners minds concerning misconceptions, lifting learners self - esteem etc. to fostering problem - solving skills through collaborative practices.

When responding to learners' answers to confirm whether they are right or not, the following may help profound;

- Capture all possible responses, by writing on the board or paper, whether from different individual learners or from different groups. Then invite further inputs from everyone or comments about the already written answers. After analyzing them thoroughly, settle, together with the learners, for the most plausible which could be one or more. This is the greatest opportunity to learners because they

will willingly and consciously engage in deep and reflective thinking as they evaluate their own ideas.
▪ Do no let any answer fly away without commenting on it or worse still sarcastically reject it. Such behaviour may breed mixed feelings in learners particularly those directly concerned. There might be inward and outward rebellion and the idea of a hostile environment which will choke effective learning.

On the other hand, when organizing learners activities first think of the objectives and the expected outcomes clearly. Then strategize by planning the set up;
▪ Pairing,
▪ In small group of say 5 or 6
▪ Whole class.

Giving guidelines on how to proceed, how long, where the activity will be done and safety measures, if any, should not be ignored. The teacher then assumes the role of a facilitator and process observer. She or he;
▪ Initiates the activity;
▪ observes keenly;
▪ offers minimal assistance;
▪ encourage full participation;
▪ direct the dynamics of the learning processes;

When learners' given time is due, the teacher asks them to present the findings freely in their own way. At this moment in time, the teacher ensures that the rest of the learners are listening or watching attentively. Finally, the teacher consciously comments intelligently and constructively by affirming and praising or correcting misconceptions without offending the originators of the ideas – learners.

3.2.3. Use of chalkboard

The chalkboard is a superior teaching and learning tool. It is virtually present in any classroom.
▪ It has got a good background so learners easily see what is written on;
▪ It is always strategically positioned to quickly capture the attention of everyone;
▪ It is always readily available;

These unique features of a chalkboard leave little room for doubt that its usage should be maximized for effective and meaningful teaching and learning. Therefore, when you intend to utilize it;
▪ Demarcate it for logical flow of information;
▪ Indicate the flow of information for learners to structure their work;
▪ Give reasonably enough time to learners to capture important learning points;

3.3. Use of teaching and learning materials

Teaching and learning materials are physical or software tools that a teacher utilizes to actualize effective teaching and learning so that the processes are

meaningful and less monotonous.

3.3.1. Teaching and learning materials for what?

It is crystal clear that learners would want and love to touch and do as they explore the world around them. Teaching and learning materials would provide just the right atmosphere for them to get 'hooked and be carried away'. At most, teaching and learning materials;

- Would aid learners to consciously direct their own learning culminating in them constructing their own knowledge.
- Would help learners retain a reasonably high percentage of the learnt concepts and principles as a result of their active involvement in the processes.
- Would foster dexterity in the learners.
- Would compel teachers to fully apply learner - centred approaches.
- Would aid sustenance of learners' interest in learning.

3.3.2. Variety of teaching materials

There is, in fact, countless teaching and learning materials that teachers could make use of for the enhancement of knowledge creation. They include;

- Works sheets
- Handouts
- Information sheets
- Contextual books
- Compact discs – ROMs
- Paper/plastic cards
- Expert human resource
- Toys
- Physical Instruments
- Newspapers
- Magazines
- Internet multimedia
- Chalkboards
- Smart boards/electronic boards

The evidence of variety of teaching and learning materials guarantees a teacher an opportunity to lay hands on or avail to learners for the actualization of their great potential.

3.3.3. Preparation of materials

Teaching learning materials **must** be relevant and appropriate for the fulfilment of the lesson's set objectives. This is important so that through the use of these materials the teacher should convey and impart the intended skills and knowledge. It, therefore, follows that these materials should be well thought out in advance and put to test if necessary before bringing them to class.

3.3.4. Dos and Don'ts on using teaching learning materials

Every teacher may be aware of the importance of making use of teaching learning materials for effective delivery of his or her lesson. However, due to certain prohibitive factors inappropriate materials may be brought to class or appropriate materials may not be put to any meaningful utilization. This may lead to serious gaps in the teaching learning processes.

a. *Dos on using teaching and learning materials*
- Use locally and readily available materials;
- Use materials prepared for a lesson;
- Use appropriate materials for a particular lesson;
- Use these materials only when necessary;
- Determine time within which materials should be used;
- If there is a possibility of danger bring it to the attention of the intended users - learners;

b. *Don'ts of using teaching and learning materials*
- Never bring materials, to class, that have no relevance to the lesson at hand. This may expose serious degree of teacher disorientation.
- Never bring materials, to class, even if relevant but not intended to be utilized. It may erode the learners' confidence in the teacher.
- Do not over use materials beyond their necessary period in the lesson. It may derail the lesson - off track.
- Do not replace actual learning processes with materials manipulation. This can distract the purpose of going to class.
- Do not overwhelm learners with quantity but quality.

3.4. Organizing pupils' discussions

Learners learn much more effectively when the planning of the instruction largely considers their input and output by active and conscious participation. Effective learning occurs when learners join in the planning and conversation. "We have based any number of collaborative learning activities upon learners' ability to talk to one another freely and effectively" *College English 1984 Pg. 635.*

a. *Learners talking to learners*

Structure an instruction such that as many learners as possible get involved in talking to one another and the teacher to fade in the background. Remember, learners are well practiced in how to talk and listen to teachers but not well versed in talking and listen to each other in how to negotiate and discuss issues of serious consequence and work towards answers among equals.

Plan the instruction in a way which ensures increased attention, involvement and engagement of all learners. There should not be room for passive observers. Learners must be agents of their own education.

b. Set clear expectations for learners participation

When learners are aware of what is expected of them they will judiciously and religiously live by it. The following may be helpful;

- Active participation will foster your thinking abilities such as being analytical, critical, innovative and creative;
- You are, as a leaner, not required to know but think; so no such responses like "I don't know" .
- Guide and help learners to move out of the narrow and reductive "I agree/disagree" attitude.
- Make it clear how learners should respond constructively and in a dignified manner to comments in class.
- Teacher should come with well thought out ways on how to proceed and preferably share these in advance with learners.

c. Ice breaking

This is an informal talk just before the actual discussion. This is not structured but anything light enough to the discussants. It has the "magical powers" to relax and make comfortable the minds of learners. It will put them in the right mood.

d. Control and use of classroom space strategically

Learners naturally create their own personal spaces within the classroom area. Unfortunately, these personal spaces may hinder their learning by way of participation. Being aware of these distracters and working towards reducing or eliminating them ensures free and total participation.

Situate learners equidistant from each other to break down their personal spaces. This allows the teacher to full access to all the learners and sets the stage for effective communication. Such kind of arrangement, preferably in a circular fashion, explicitly and concretely signals a particular kind of expected class participation .

e. Lowering the communication channel

The teacher closes up on learners by drawing nearer to them. Working from behind or among the learners lessens the "threat" from the teacher. Sitting with learners on the same desk is a clear sign that the teacher wants to be part of the whole lesson - rather than apart from it. It lets the teacher look and talk to them across an even plane.

f. Surveillance function

Keeping eye contact with the discussants is a vital ingredient for effective discussion. Establishing an eye contact opens communication channel and the learner(s) senses it is time to speak.

The teacher's scanning eye signals other learners that they should be paying

attention to the speaker. This implies that if a teacher makes eye contact with all the learners in class, they are more likely to stay involved.

g. Ask good questions

The kind of questions that teachers ask can make the difference between an engaging and fruitful discussion and the verbal equivalent of pulling teeth!

4.   See – Evaluating a Lesson

4.1. Points for Evaluating a lesson

There are several approaches in which someone would evaluate a lesson. Some of the lessons are evaluated by intuition and the like. However there is need to develop a lesson evaluation system that would promote and foster the mission statement and the goals of the Ministry of Education.

In trying to harmonize the lesson evaluation, six areas have been identified as being key in coming up with a balanced evaluation. These are Objectives & Its Attainment, Lesson Progression, Teaching Materials, Questioning, Task allocation in the Lesson Plan, Other Factors. Under each area, a number of small emerging questions have been attached. In checking these we are in the position to clearly identify or verify which areas need attention. After that the evaluator is in the position to provide qualitative lesson evaluation. Refer to Lesson

4.1.1. Objectives & Its Attainment
The success of the lesson is dependant on the objectives set in a lesson, it is very important for us to check how the objectives have been written and if at all they were attained in the lesson delivery. To this effect some of the following would be looked at in the lesson plan and presentation:
- See if the lesson objectives are clearly stated in the lesson plan
- Check if the stated objectives could be attained in a lesson
- Are the stated objectives measurable
- Were the lesson objectives told to the students during the lesson as this may affect their retention rate
- During the lesson, find out if the students did find core contents or concept by themselves
- The time for evaluating or confirming what the students had learned is also important as it affects their learning
- At the end make an analysis to find out if most of the students attain lesson objectives

4.1.2. Lesson Progression
The way in which the lesson progress as it is being delivered is important. Some times a planned lesson could be very good but the delivery becomes a problem. We need to check the way in which the lesson is delivered and compare it with the plan. To this effect the following have been suggested as guides for checking the lesson delivery.
- Check if introductory part of the lesson motivate students well
- Check if the teacher ask the students to hypothesize a solution before instructing them to have an activity or experiment
- Find out if there was a presentation by students after an activity
- Confirm if there was a discussion among students to find answers or better solutions to the given tasks.
- The teacher intended to confirm scientific concept or values in the process of

teaching.
- Both the teacher and the students were able to conclude what they had learned in a lesson.

4.1.3. Teaching Materials

Teaching and learning materials can enhance learning. However if these materials are not well organized they may end up disturbing the lesson. They are meant to help achieve the objectives. A look at these materials will help us see what areas would need strengthening. To this effect the following would be suggested as areas to look at.
- Did the teacher use any kind of teaching materials apart from blackboard and chalk?
- Teaching materials were prepared properly before the lesson
- The teacher used improvised or locally available teaching materials in a lesson.
- The students were able to use or understand the prepared teaching materials.
- Teaching materials used in a lesson enhanced students' understandings

4.1.4. Questioning

The cognitive level of blooms taxonomy helps us categories the level of lesson delivery. Most lesson observed in Zambia showed that teachers concentrate on the first three levels. This would not help in learning for sustainability and achieving the mission and goals of the education system. The assessment of the questions in a lesson need to be done and categorized as remembering, understanding, applying, analyzing, evaluating, creating and others.

Every question asked in the class is checked and categorized. At the end we are in the position to tell if the lesson was well balanced. This type of teaching would help us develop the higher order thinking skills for learners who are able to event new products as they would be critical and analytical thinkers.

4.1.5. Task allocation in the Lesson Plan

In order to asses if the lesson is teacher of learner centered, we use the lesson plan to check the statements written in the lesson. Those which start with teacher are counted and those which start with pupils are counted as well. The statements which are not specified are categorized as others. At the end if that we are able to tell if the lesson was either teacher or leaner centered by percentage calculations.

4.1.6. Other Factors

At the end of it all we can now come and look at the other factors. These are how the teacher managed the time in the lesson presentation. We also look at factors such as how well the teacher prepared the lesson and managed the blackboard. If it's a practical lesson we look at the laboratory safety and finally look at how well the learners were guided in taking notes.

4.2. Points for observing a lesson

The lesson should be observed from the view of learning. The culture of sitting at the back by the observer is not allowed as one would not see the facial expressions on the face of the children. Walking around would help indentify the actual skills learners have or do not have. The observers need to have specific areas of observation in the lesson. This will help in the post demo discussion.

Therefore the some of the important points are

* The position of the observers in class
  This is important as our aim is not to check the teaching but the learning. Most people prefer sitting at the back hence look at the teaching not the learning. The focus, should be on the child's learning.
* The presence of a lesson plan
  The lesson plan shows the ability of a teacher. The advise to be offered and the skills of a teacher and dependant on the lesson plan. It is important to have a lesson to complete the evaluation.
* Sharing the specific point of observation
  The lesson process observation need to be balanced and to achieve this much as all observers could be observing the lesson, it is important to share the points of observation e.g Introduction, Development and Conclusion. These could be done so that we end up with a balanced deliberations. However it does not mean that others could not observe other areas as well.
* Pupils activities
  Through properly structures activities we would observe the type of learning taking place.
  It is therefore important to much the learning activities with teaching activities and see that they
* Teacher activities
  Teacher activities are very crucial as they tend to render a lesson as either being teacher centred or learner centered. The skill of teacher activities show the adequacies or in adequacy of a teacher

4.3. How to handle with post-demo discussion (Facilitation Skills)

The success and base for lesson study is dependant on the facilitation skills when it comes to post demo discussion. The aim of the post demo discussion is to use the observed outcomes and be internalized by the teachers. Effective post demos discussion -bring out effective teachers. It is therefore important to critically look at how the post demo discussions should be handled to get the desired results.
The objectives of the Post –Demo discussion are to improve the knowledge, skills & attitudes of teachers in teaching on one hand and to strengthen positive attitude of learning and teamwork of teachers in a school on the other.

To this effect, the following has been recommended as the flow of discussion

a. Asking comments from Demo Teacher

- If the lesson was conducted as planned
- If there were any findings or concerns in the lesson
- How he/she felt the learning and behavior of pupils in the lesson
- What improvements could be done.

b. Asking comments from Observers

- How was a preparation?
- How was an introductory part?
- How was a development part?
- How was a concluding part?
- Were objectives attained? Why?
- How were the questions of teacher?
- How was a use of teaching materials?
- How was the participation of pupils?

c. Others

- Time Management
- Blackboard Work
- Teacher's Attitude & Behavior

d. Discussing how to improve

- Which point can be improved?
- What alternative can be considered?
- What outputs can be expected by the improvement?

e. Confirming what the lessons have been learnt in the meeting

In the process of discussion, the critiquing arises. Depending on the way the critique is done, it could enhance or hinder the effective learning. What is worth stressing is the fact that the lessons are being developed as a group hence they need to be owned by the group. Therefore when it comes to critiquing we are critiquing the lesson and not the teacher.

Five (5) Points for Effective Critiquing have been suggested and these are

i. Conducive atmosphere
   The atmosphere for debate needs to be nential bearing in that we are aiming at developing one another.

ii. Common Understanding of Objectives
   We need to bear in mind that the objectives on the meeting is to develop each other. Hence its not a fault finding session but a learning process.

iii. Focus on Improvement
   The minds of all the participants in the group should be that of seeing the parts has need improvement.

iv. Integration of Ideas
   Thinking is always a variant levels bearing in mind that we have different backgrounds and training. The need to integrate these variant ideas is very important

v.   Record of Outputs
Whatever discussion and instruments used in the lesson needs to be documented. This will build the image or path of development undertaken in a school or group.

4.4. Revising lesson plan

When the lesson has been discussed, the group will have to revise the lesson. Every lesson has the potential of improvement, No lesson is perfect hence there is room for improvement. Using the lesson evaluation instrument and discussion, the necessary changes are made and a new lesson plan is developed meant for teaching again. Sometimes it turns out that the revised lesson could be better or worse than the first lesson. The following would be the points of revising a lesson plan

• Do not take too long to revise a lesson plan after first demo
• Allow for conclusive discussion on which aspects should be changed
• Look at what would be the effects of those changes in line with the objectives
• How would the changed affect the targeted class

PART II

<u>Useful Information based on Experiences</u>
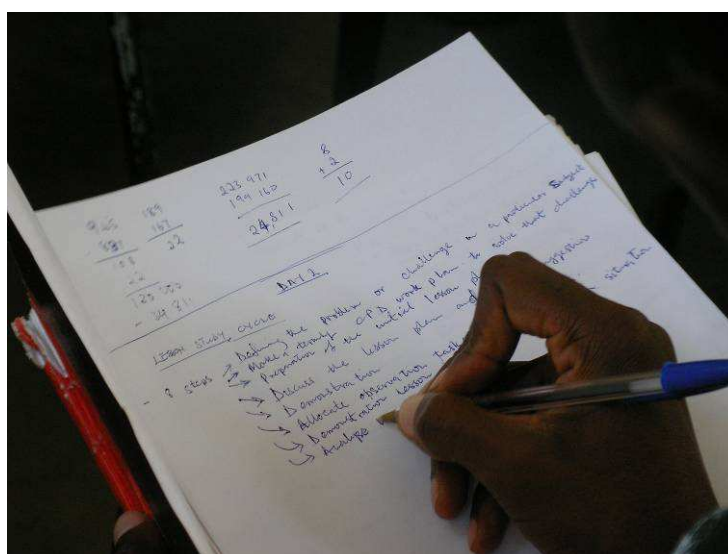
5. Ideas for teachers to obtain effective teaching skills

This part describes the idea and suggestions to enable our teachers to obtain knowledge and skills needed for better teaching, especially in the framework of school-based CPD through lesson study. These idea and suggestions are stated based on the experience in Central Province under school-based CPD program. Lesson study, which has been a core tool in the program, can be a ideal venue for the teachers to learn, discuss, and share the idea for better teaching and better lessons at school level.

5.1. For effective planning of a lesson

We noted earlier on that a lesson plan is a detailed step-by-step description of how the lesson will progress in order to achieve the lesson objectives. There are a few thoughts we can share on how teachers can plan for a lesson effectively.

- Consider learners' abilities- do not plan for the brightest pupils only. Plan in such a way that both the slow and fast learners are challenged and extended by work.
- Explaining and questioning are two key skills you should work to improve. It is therefore a good idea to write the questions in advance which you might want to use so that the pupils grasp the topic or lesson and develop thinking.
- Reflect on the previous lesson then modify future practices on the basis of your reflection. Three questions can assist you; what went well? What didn't go well? What should change next time?
- Since a good beginning is a crucial part of a successful lesson as it sets the tone, motivates the pupils and establishes authority, you need to ask yourself how you will introduce the ideas and objectives of the lesson, how you will get learners' attention and motivate them, how you will tie lesson objectives with learners' interests and past classroom activities
- You should know the exact number of pupils, available materials, equipment, and resources. This has a lot of implications some of which are classroom organization and possible improvisation.
- Anticipate that additional work may be needed. i.e. plan extra activities in case your chosen approach does not work or pupils complete task more quickly than you anticipate.
- Plan the rhythm of the lesson to give a balance between you (the teacher talk) and the learners' activities.
- Be gender sensitive
- Chose problems that vary contextually but are essentially similar.

5.2. For effective conduct of a lesson

Actualizing a lesson is mid-way between what the teachers intend to do and the expected outcomes of their intentions. The process of delivering a lesson is, therefore at the centre of the teaching and learning processes. It undoubtedly implies that this process should just be as effective as possible.
The effectiveness of delivery of a lesson may be judged on;

- the techniques employed and utilized in how both the teacher and learners phrase and respond to questions;
- the aptitudes the teacher brings to the fore;
- how teaching and learning tools contribute to innovativeness and creativity of learners in pursuit of new knowledge;
- how active, interested and engaged both the teacher and learners are;

5.2.1. Issues on questioning in Zambia

The general situation is one where the following have persisted in and across schools;

- teachers depend to a larger extent on phrasing questions from the lower bracket of cognitive domain;
- teachers prefer directing and requesting mainly the higher attaining learners paying little attention to lower achievers;
- teachers preferring to give leading or suggestive questions to learners;
- teachers do little to make available stimulating questions to compel learners "see" sense in the unit under way;

5.2.2. Issues on delivering skills

The teachers' position should be such that their learnt aptitudes must make learning for learners easier and less threatening. It is quite disturbing, however, to note that some of our "educated" teachers portray an unfortunate side of what is expected of them;

- they talk to themselves instead of talking with learners;
- they ask and answer their own questions;
- they think for learners by not giving them chance to fully and completely express their thoughts;
- they shut learners up instead of aiding them€31
- they do activities on behalf of learners;

5.2.3. Concerns on the use of teaching and learning materials

Materials are specifically meant for understanding of abstract concepts, development of learners' manipulative skills, triggering interest in learning and promoting the culture of working together in looking for solutions to problems. If we were doing the right things in Zambia, we would have the evidence in our clients - learners. On the contrary we see;

- little or no use at all of teaching learning materials in our classrooms despite them being available;
- total neglect to ensure these materials are available where there is lack of them;
- some teachers vehemently and proudly speak against practical lessons in preference to "less taxing" chalk and talk;

5.2.4. Issues on organizing pupils' discussions

Through discussions we can measure learners' ability to articulate issues and gain significant insights on the weaknesses and strengths of our learners. We have to do a great deal in this area.

- Usually a teacher would give discussion question and leave the classroom;
- Sometimes a teacher would let learners discuss while he or she reads unrelated material altogether;
- Worse still some teachers dose off as learners are busy with their discussions;
- Others would tell learners to turn a specific page in a book and say discuss without giving any expectations;

5.3. For effective evaluation of a lesson

The base of lesson study as earlier alluded to is the process taken and how the discussion is done. The team should be very clear of what they are expected to do. The facilitators should be of sound mind, focused and knowledgeable of the subject matter.

The time between the observed lesson and discussion should be within as taking it to a later date would not show the vivid experiences.

Sharing areas of observation makes the lesson to be balanced from the observation point of view. The facilitator should guide properly. The role of observers in class should be spelt out clearly.

6. Anticipated challenge and possible countermeasures based on experience

6.1. Anticipated challenge and possible countermeasures in planning lesson

Anticipated challenges	Possible explanations / Counter-measures
Inadequate of syllabi in schools	*Problem analysis:* Many schools and in many learning areas there is a lack syllabi and so the teachers are tempted to teach according to the outline in the teacher's or pupil's book. There is a risk of spending a lot more time and resources on materials that are not necessary.
	Possible Counter-measure: School management should ensure that teaching and learning materials in general and the syllabi in specific should be made available to the teachers.
Inadequate scheming skills of teachers	*Problem analysis:* Schemes of work are often found to follow teacher's or pupil's recommended textbooks in that learning area without taking into consideration certain factors(e.g. season, critical incidents, inter-departmental/section) that influence when certain topics can be taught effectively. At times the syllabus is just copied into the scheme of work.
	Possible Counter-measure: . There is need to in-service (SBCPD) our teachers on interpretation of the syllabus and scheming.. Effective supervision is also required at all levels.
Teachers complain of lack of time to write lesson plans for each class due to large numbers of classes they are allocated to.	*Problem analysis:* Most of the departments especially the Science and Mathematics departments are understaffed and so the few teachers available are overloaded. This complicates the issue of lesson planning as teachers claim that they are spending a lot more time on writing lesson plans as opposed to preparing themselves in content and other teaching- learning materials.
	Possible Counter-measure: Heads of departments/sections together with the school managers should agree on how best the balance can be struck. It is however important that indications of lesson plans are available before the teacher takes on a lesson.
Difficulties related to writing the rationale	*Problem analysis:* The rationale is often confused in application with the lesson objectives. Many teachers still inquire as to how and why the rationale should be included in the lesson plan.
	Possible Counter-measure: In-service teachers on the four components of the rationale and the differences be spelt out clearly. Furthermore the benefits of this component of the lesson plan to their professional development should be understood.

Difficulties in instituting a learner – centered lesson	*Problem analysis:* Teachers are reluctant to adopt a new mind set. This reluctance is not surprising. Teachers have always known to "give" knowledge and the learners "receive" knowledge. Our role models in the classroom have operated under this premise and this is what we have been trained to do.
	Possible Counter-measure: Adopting a new mind set requires that we challenge our experiences through SBCPD on the paradigm shift with reference to learner –centered teaching approaches.
Teaching-learning material, preparation and improvisation.	*Problem analysis:* With the rampart lack of conventional teaching –learning materials in most schools, hands – on activities have been scanty in most classrooms. The idea of improvisation has not been well managed. Furthermore the teachers claim that they have very little time to prepare the low cost material for their lessons.
	Possible Counter-measure: In –service and expose teachers to simple small scale hands-on activities and the effective use of low cost materials. Furthermore the immediate environment should be increasingly seen as an extended part of the classroom. Additionally mechanisms should be put in place on safe keeping of the generated materials.

6.2. Anticipated challenge and possible counter measures in implementing lesson

Anticipated challenges	Possible explanation / Counter - measure
Cherishing contributions of only higher attainers	*Problem analysis:* It is a common place to see only a 'selected few" asking and answering the teacher. These few are intellectually advantaged fastest talkers and achievers in class. Generally this scenario pushes the slower achievers in the background and become less conspicuous. *Possible counter-measure:* Holding regular school-based professional development to encourage teachers to be considering the whole so that slower achievers could be accorded the chance.
Trivializing impact of teaching and learning materials to learning	*Problem analysis:* Our teachers wrongly think that teaching and learning materials serve no purpose. Others always blame learners of lack of skills to handle these materials hence should not be availed. In some cases, materials and instruments could remain untouched for years!

	Possible counter-measure: Teachers should be innovative enough to visualize how children get fascinated when playing with toys. Creating similar scenarios in classroom activities will rekindle, in learners; ■ Curiosity ■ Interest ■ Enthusiasm These factors will help keep boredom at bay and sustain concentration making teaching and learning enjoyable, memorable and meaningful to the benefit of both the learner and the teacher.
Absence of classroom tactical skills	*Problem analysis:* A number of our teachers have become shadows of themselves; talking the talk of threats, intimidation, downgrading, sarcastic towards learners, repulsive exposition and clumsy in every imaginable way. Additionally, though unpalatable, drunk in full view of learners.
	Possible counter-measure: In-service training must be reinforced to enable teachers get the chance once again to handle learners with; ■ The listening ear; ■ Compassionate exposition; ■ Passion and respect; ■ Sober and cheerful mind;
Questioning leaning heavily on lower cognitive skills	*Problem analysis:* Teachers have adopted their own "culture" of always wanting to ask question which will prompt only recall. Despite repeated pleas from academicians to cultivate the habit of considering higher level questions no significant headways have been observed. This is the case both during lesson delivery and assessment tests. *Possible counter-measure:* Need to revisit the cognitive domain theory to have a re-look at the importance of cutting across. The mind provoking questions must be encouraged to better the learners way of looking at issues through the 'lens' of deep-rooted thinking.
Detachment from time consciousness	*Problem analysis:* It has been observed with dismay that teachers do not take time seriously. They could start or end a lesson at their own time thereby depriving the child of the precious commodity.
	Possible counter-measure: "Time waits for no one, and once lost cannot be regained", say an old adage. Administrators should device ways of encouraging teachers to respect good time management

	practices and the great benefits of exercising these good habits. Planning can also help the teacher to manage time.

6.3. Anticipated challenge and possible countermeasures in reviewing lesson

Anticipated challenges	Possible explanations / Counter-measures
Inadequate knowledge and skills to handle the post demo discussion	*Problem analysis:* The level of training of our teachers shows that they either have insufficient content or pedagogy. This reduces their skills when it comes to discussions in the group.
	Possible Counter-measure: • Offer continuous skills development through school based CPD • Embed the lesson study in the pre-service curriculum
Critiquing a teacher instead of a lesson	*Problem analysis:* The long term culture has been that the teachers were not visiting each others lessons; to that effect each teacher becomes defensive on their lesson. This is later translated in the group discussion were the teachers tend to criticize the teacher who was teaching instead of criticizing a lesson.
	Possible Counter-measure: • Explain/remind the purpose of having lesson study to all the teachers • Create an atmosphere for lesson discussion instead of the teacher. • All teachers are involved in planning the lesson in order to own it.

PART III

SAMPLE OF FORMATS AND SLIDES

Sample Lesson Monitoring & Evaluation Format (Format 02)

Lesson Assessment Format (Technical Monitoring)

Lesson Information:

District:＿＿＿＿＿＿＿＿＿＿＿＿＿School:＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

Subject:＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿Grade: ＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

Topic:＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

Teacher (Demonstrator):＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿(TS No.:＿＿＿＿＿＿＿＿＿＿)

1. Objectives & Its Attainment

Please check one of three categories (No: Unclear: Yes) on the following items

#	Item	No	Unclear	Yes
1	Are the lesson objectives clearly stated in the lesson plan?			
2	Can the stated objectives be attained in a lesson?			
3	Are the stated objectives measurable?			
4	Were the lesson topics told to the students during the lesson?			
5	In a lesson, did the students find core contents or concept by themselves?			
6	Was there time for evaluating or confirming what the students had learned?			
7	Did most of the students attain lesson objectives?			

2. Lesson Progression

Please check one of three categories (No: Unclear: Yes) on the following items.

#	Item	No	Unclear	Yes
1	Did the introductory part of the lesson motivate students well?			
2	Did the teacher ask the students to hypothesize a solution before instructing them to have an activity or experiment?			
3	There was a presentation by students after an activity.			
4	There was a discussion among students to find answers or better solutions to the given tasks.			
5	The teacher intended to confirm subject concept or values in the process of teaching.			
6	Both the teacher and the students were able to conclude what they had learned in a lesson.			

3. Teaching Materials

Please check one of three categories (No: Unclear: Yes) on the following items.

#	Item	No	Unclear	Yes
1	Did the teacher use any kind of teaching materials apart from blackboard and chalk?			
2	Teaching materials were prepared properly before the lesson.			
3	The teacher used improvised or locally available teaching materials in a lesson.			
4	The students were able to use or understand the prepared teaching materials.			
5	Teaching materials used in a lesson enhanced students' understandings.			

4. Questioning

The teacher's questions in a lesson categorized by Bloom's Taxonomy (Cognitive Process Dimension) of Educational Objectives.

	Remember	Understanding	Application	Analysis	Evaluation	Creation	Others	Total
Number of Teacher's Questions								
Percentage								100 %

5. Task allocation in the Lesson Plan

	Number of Tasks	Percentage
Teacher centered tasks		
Learner or student centered tasks		
Others (None of Above)		
Total		100 %

6. Other Factors

#	Item	No	Unclear	Yes
1	The teacher managed time well during lesson implementation.			
2	The teacher prepared for the lesson well.			
3	The teacher managed the blackboard very well.			
4	There were no problems in line with laboratory safety in a lesson.			
5	In a lesson, students were guided on taking notes or records well.			

7. Comments (if any)

Name of the Teacher: _____ TS No:_____ Signature_____

Observed by:

Name:_____
Title:_____
Date:_____

Sample for analyzing results on Baseline and End-line survey

1. Result on the Observation of Science Lessons (by Format 02)

Analysis Factors	2006 (N=44)	2007 (N=29)
F1: Objective & its attainment	1.31	1.67
F2: Lesson Progression (Processing)	1.11	1.60
F3: Use of Teaching Materials	1.46	1.79
F4: Cognitive Level of Teacher's Questions	0.61	0.58
F5: Task allocated to learners in Lesson Plan	0.40	1.16
F6: Other factors (Time management, Board, work, Lab. Safety etc.)	1.41	1.59

Comparison between Baseline and Endline on the Observation of Science Lessons

Comparison between Baseline and Endline Result on the Observation of Science Lessons (Grade 8 - 12)

2006   2007

F1: Objective & its attainment
F2: Lesson Progression (Processing)
F3: Use of Teaching Materials
F4: Cognitive level of teacher's question
F5: Task allocated to Learners in lesson plan
F6: Other factors (Time Mgt., Boardwork, laboratory safety etc.)
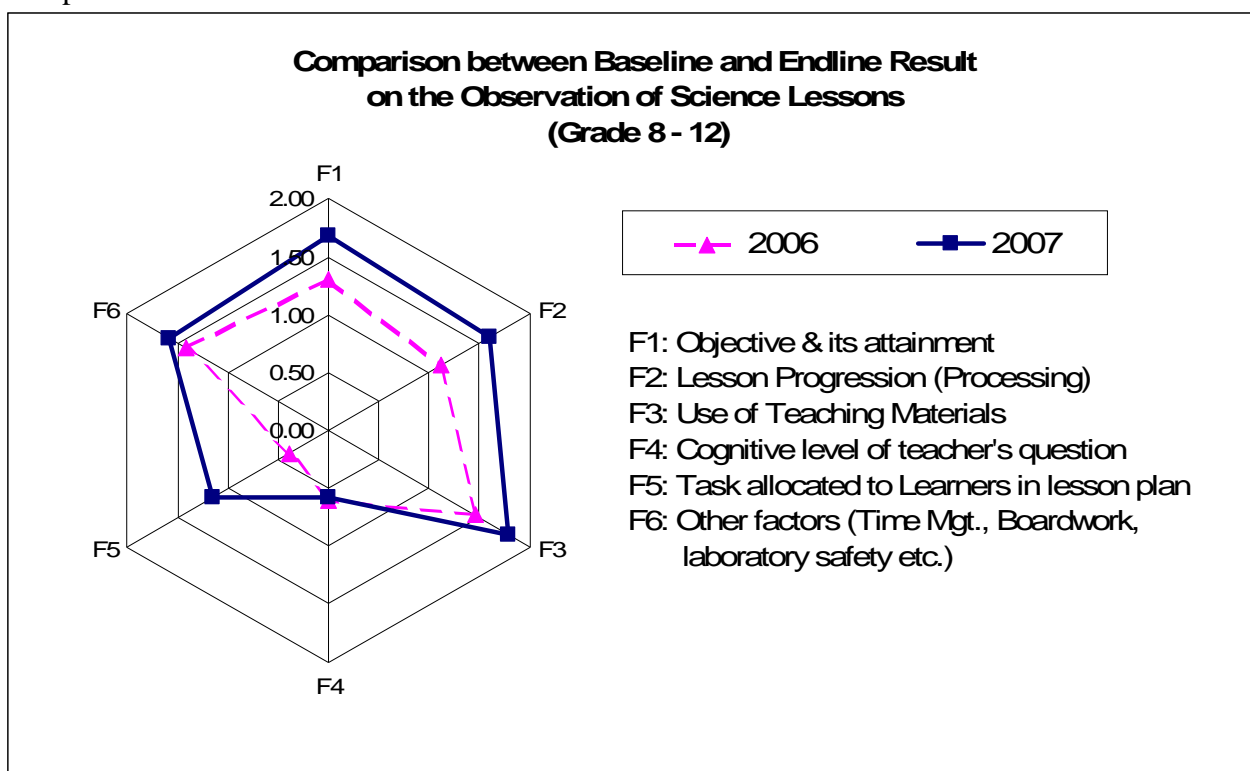
Sample slides used in Workshops/Meetings

Slides 01: <u>Lesson Planning – Keys & skills for writing lesson plan</u>

Lesson Plan

Keys & skills for writing lesson plan

Ministry of Education
Central Province
Republic of Zambia

1

Lesson Plan

- Guide for Teaching
- Base for Lesson Study
- Shows ability of teacher(s)
- Variety of formats

2

Suggested Components in Lesson Plan

- Title of Lesson Plan (Subject)
- Name of Teacher
- Name of School
- Grade
- Date & Time of the Lesson
- Duration
- Class used for demonstration
- Topic & Sub-topic

3

- Rational (Background)
- Objectives
- Pre-requisites
- Resources & Materials
- References
- Lesson Process
- Method for Assessment
- Remarks

4

Crucial Components

- Rational
- Objectives
- Lesson Process

5

Rational

- Shows how teacher understands the knowledge & skills to be taught in the lesson
- Consists of 4 parts;
  1. <u>Content</u> --- What to be taught/What to be learned
  2. <u>Concept/Value</u> --- Why it should be learned/How important the Concept & Values of the topic are
  3. <u>Strategy</u> --- Strategy of teaching/learning
  4. <u>Position</u> --- Position in the series of lessons

6

Herbivores & Carnivores

Rational:

1) In this topic, pupils will learn the basic knowledge for classifying animals in terms of foods they are eating. ----

2) Through the observation & practice of classifying, it is expected that the pupils will get respects on the complexity of animal body and the way of evolution for adjusting their environment. ----

7

---

3) In this lesson, using discovery approach, we intend to let the pupils find the differences on the shape of the teeth ----

4) This lesson is the 5th period of the 8 lessons for teaching the topic of "Vertebrate".

8

Objectives

- Four Key points for writing behavioral objectives
  A. Audience
  B. Behavior
  C. Conditions
  D. Degree of Proficiency (Performance Level)

9

- Four Key points for writing objectives
  A. Audience
  B. Behavior
  C. Conditions
  D. Degree of Proficiency (Performance Level)

  > For whom the objective is intended.
  >
  > "The pupils will be able to...."
  > "The students will be able to..."

10

- Four Key points for writing objectives
  A. Audience
  B. Behavior
  C. Con...

  > 1) Write a statement that describes main intent or performance you expect of the children
  > 2) Use observable words
  > 3) If the performance happens to be covert, add an indicating behavior to the objective by which the main performance can be known.

  el)

  OVERT and COVERT behaviors
  Overt --- can be observed directly (visible, audible)
  Covert --- cannot be observed directly (mental, invisible, cognitive)
    Example:
    --- be able to add numbers (write the solutions) written in binary notation.
    --- be able to identify (underline or circle) misspelled words on ---

---

- Four Key points for writing objectives
  A. Audience
  B. Behavior
  C. Conditions

  > To state the objectives clearly, sometimes you have to state conditions you will impose when children are demonstrating their mastery of the objectives.
  >   E.g. Given a list of ....,
  >   With the data of ....,

  el)

  Questions you can ask yourself as a guide to your identifying conditions.
    E.g. What will the learner be allowed to use?
        What will not the learner be allowed to use?
        Under what conditions, will you expect the desired performance?

Objectives

- Four Key objectives

  > You will need to state acceptable level of performance for the objective.
  > E.G Time limits
  >   Accuracy
  >   Quality

  A. Audience
  B. Behavior
  C. Conditions
  D. Degree of Proficiency (Performance Level)

13

- To understand how to classify plants →
  - At the end of the lesson, pupils will be able to classify (write name of the plants in grouping format) 10 common plants into 3 groups.

- At the end of the lesson, students will be able to explain the relationship between the size of electric current and voltage →
  - ------, drawing the graph showing the relationship -----, students will be able to tell the size of current is directly proportional to the voltage given to the circuit.

14

Lesson Process

- Comparison of two lesson plans
  - Lesson Process A
  - Lesson Process B

- Topic: Chemical Reaction
- Sub-topic: Oxidation

15

Lesson Process A

STEP (Time)	Teaching/Learning Activities	Points/Remarks
Introduction (5 min)	-Teacher asks pupils to state names of metals -Teacher asks pupils if those metals can be burnt. -Teacher shows that steel wool can be burnt. -Teacher tells pupils that steel wool can be burnt because it is cut very tin and wools are exposed to the air.	Teacher shows some samples of metal objects.
Development (25 min)	Activity 1: Change of the mass 1. Put learners in groups 2. Give them activity sheet and materials 3. Let them start working in groups for checking the change of mass of steel wool before and after burning 4. Group secretaries report 5. Consolidate the points and correct answers	Teacher will help group which can not perform well.

(Omitted below)

16

Lesson Process B

STEP (Time)	Teaching/Learning Activities	Points/Remarks
Introduction (5 min)	Do you think we can burn steel wool? -Most of pupils think steel wool can not be burnt -Pupils are surprised at seeing steel wool is burnt easily.	Let pupils have interest in the activity
Development (25 min)	If we burn steel wool, will the mass become lighter or heavier? -Most of pupils say it becomes lighter. -Some pupils says no change -Some says become heavier -Pupils are asked to discuss why they think so. Activity 1: Change of the mass 1. Put learners in groups 2. Give them activity sheet and materials 3. -------- (Omitted below)	Give time for thinking well. Vote for the answer, if necessary Pupils should be motivated by the prior discussion.

17

Lesson Process

- Questions for Checking your Lesson Plan
  - Are the activities written in the view of learners?
  - Is the pivotal question (main question) stated clearly?
  - Is the process of lesson following the process of pupils' thought?

18

Lesson Process A

STEP (Time)	Teaching/Learning Activities	Points/Remarks
Introduction (5 min)	-Teacher asks pupils to state names of metals -Teacher asks pupils if those metals can be burnt. -Teacher shows that steel ~~~ -Teacher tells pupils that ste~~ burnt because it is cut very ~~ exposed to the air.	Teacher shows some samples of metal objects
Development (25 min)	Activity 1: Change of the m~~~ 1. Put learners in g~ 2. Give them activity s~ 3. Let them start workin~ checking the change~ before and after bur~ 4. Group secretaries rep~~ 5. Consolidate the points and correct answers	
	(Omitted below)	19

Explanations are written in the view of teaching.

No pivotal question before activity. Pupils may not know why they have to do that activity.

Lesson Process B

STEP (Time)	Teaching/Learning Activities	Points/Remarks
Introduction (5 min)	Do you think we can burn steel wo~ -Most of pupils think steel woo~ -Pupils are surprised at seeing ste~ easily.	
Development (25 min)	If we burn steel wool, will the mass become lighter or heavier? -Most of pupils say it bec~~ -Some pupils says no cha~ -Some says become heavie~ -Pupils are asked to discuss so. Activity 1: Change of the mass~ 1. Put learners in groups 2. Give them activity sheet and materials 3. -------- (Omitted below)	Give time for thinking well motivated by the prior discussion. 20

Explanations are written in the view of learners.

Pivotal question enables pupils to have prediction and discussion before activity.

Some practical skills

- Write descriptions <u>in the view of learners</u>
  - Teacher asks.... → Pupils are asked to...
  - Teacher instructs... → Pupils conduct....
- Prepare <u>Pivotal questions</u>
  - Relate to the major objectives or parts of the lesson.
  - Usually written in advance in a lesson plan
  - To introduce & clarify major ideas, to motivate pupils' discussion or discoveries
  - Followed by several **Emerging questions**

21

Some practical skills

- Put <u>expected time duration</u> for each step
  - Introduction --- 5 min.
  - Development --- 25 min. etc.
- Attach <u>necessary documents</u> as references
  - Student Activity Sheet
  - Assessment format
  - Observation format
  - Students' seat arrangement
  - Board work plan etc.

22

Please enjoy preparing lesson plan!

23

Slides 02: <u>Questioning Techniques "Knowledge & Skills for Better Questioning in</u>
<u>Classroom"</u>

Questioning Techniques
"Knowledge & Skills
for Better Questioning in Classroom"

--- For the 3rd cycle of Lesson Study ---

SMASTE-CPD Program
Ministry of Education
Central Province

1

• Introduction:

– Please listen to "Fastele Fastele" Part 2, a Radio Drama on Questioning.

2

Why Questioning Techniques?

• <u>Skillful questioning</u> can;
  – Arouse pupils' curiosity
  – Stimulate pupils' imagination
  – Motivate pupils to search out new knowledge
  – Make pupils think
  – Help pupils clarify concepts & problems
  – Provoke effective discussions of pupils

3

• The session consists of ;
  1. Types of Questions
  2. Formulation of Questions
  3. Guidelines for Asking Questions
  4. Don'ts on Questioning
  5. Do's on Questioning

4

---

1. Types of Questions

• According to thinking process (Cognitive Taxonomy)
  – <u>Low-Level Questions:</u>
    • Emphasize memory & recall of certain information
  – <u>High-Level Questions:</u>
    • Deal with complex & abstract thinking

  – Low & High-Level Questions should be mixed according to children's process of thinking

5

Bloom's Taxonomy (Cognitive Domain)

1. Knowledge
2. Comprehension
3. Application
4. Analysis
5. Evaluation
6. Creation

6

Bloom's Taxonomy (Cognitive Domain)

1. Knowledge
2. Comprehension
3. Application
4. Analysis
5. Evaluation
6. Creation

Simply ask knowledge or memorization of pupils/students. Usually can be answered Yes/No or simple word.

Who discovered the law of motion? What is the unit of acceleration?

7

Bloom's Taxonomy (Cognitive Domain)

1. Knowledge
2. Comprehension
3. Application
4. Analysis
5. Evaluation
6. Creation

Asking reason or situation to relate things to each other. Often started with Why, How, or What relationship do you find... etc.

What does negative acceleration mean? Why can gravity cause negative acceleration to a falling body?

8

Bloom's Taxonomy (Cognitive Domain)

1. Knowledge
2. Comprehension
3. Application
4. Analysis
5. Evaluation
6. Creation

Ask to apply things to other situations, or to find examples & alternatives related to topics of discussion.

Where can we find an example showing that negative acceleration is applied? If we don't have a stopwatch, how can we measure the time in this experiment?

9

Bloom's Taxonomy (Cognitive Domain)

1. Knowledge
2. Comprehension
3. Application
4. Analysis
5. Evaluation
6. Creation

Ask to re-organize concepts or knowledge by relating, separating, or grouping.

What relationship can we find on this graph? Based on the result of the experiment, why can we say that acceleration is proportional to the force given to the object?

Bloom's Taxonomy (Cognitive Domain)

1. Knowledge
2. Comprehension
3. Application
4. Analysis
5. Evaluation
6. Creation

Ask to assess a matter or phenomenon. Ask to give idea as a result of judgment.

How did the concept of acceleration contribute the analysis on the motions of planets? What is your judgment on .....?

Bloom's Taxonomy (Cognitive Domain)

1. Knowledge
2. Comprehension
3. Application
4. Analysis
5. Evaluation
6. Creation

Ask to produce new idea or concept as a result of thinking.

Think out an ideal transportation system in the future, which can use the effect of acceleration efficiently.

Practice: Topic "Government of Zambia"

- Knowledge
  - Who is the president of Zambia?
- Comprehension
  - What is a role of parliament?
- Application
  - What is an alternative of parliament system?

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Practice: Topic "Government of Zambia"

- Analysis
  - What are the good and bad points of the current Zambian Government?
- Evaluation
  - Give your percentage-rate to the current Zambian Government and state the reasons.
- Creation
  - State 3 ways in which the Zambian Government system could be improved.

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- Practice:

  - Chose your own topic and create questions for every level of Bloom's Taxonomy on your notebook.

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1. Types of Questions (Continued)

- According to type of answers required
  - Convergent Questions:
    - Tend to have one correct or best answer
    - Usually start with What, Who, When, or Where
    - Good for practice or review
  - Divergent Questions:
    - Open-ended and usually have many appropriate, different answers
    - Usually start with How, or Why
    - Give students more opportunity for participate

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Examples: Convergent & Divergent Questions

- (C) What are the two elements of water?
- (D) How is water purified?

- (C) Which planet is closest to the sun?
- (D) How would you compare living conditions on Mercury with those on Earth?

- (C) What is the definition of triangle?
- (D) How have triangles influenced our architecture?

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2. Formulation of Questions

Step 1: Define the objective and process of a lesson

Step 2: State four or five Pivotal Questions that relate to the major objectives or parts of the lesson.

Step 3: State predicted responses of pupils for each question.

Step 4: Check if the questions and responses form sequence/flow.

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2. Formulation of Questions

- Key points for formulating questions
  - Conciseness --- simple and easily understood by all pupils
  - Challenge --- intentionally put provoking questions
  - Group Orientation --- addressed to all pupils
  - Appropriateness to age & ability of pupils --- not easy not difficult
  - Variety --- Mix several types of questions

19

3. Guidelines for asking questions

- Wait-time
  - Give sufficient time of thinking, creating answers to your pupils
  - Preferably 5 – 60 seconds
- Directing
  - Intentionally direct your question to the pupils in a certain order
  - Generally from slow to fast learner, from vague to concrete answers

20

3. Guidelines for asking questions

- Redirecting & Probing
  - Redirect the question to other pupils
  - Generally from low to high achieving pupils
  - Probe one pupil, if the answer is vague or improper
- Commenting & Praising
  - Give brief comment to pupils' answer, "Good." "Correct." "That's true." etc.
  - Praise pupils' answers to encourage, especially for low-achievers

21

4. Don'ts on questioning

1. Don't ask yes/no questions frequently
2. Don't ask indefinite or vague questions
3. Don't ask guessing questions
4. Don't ask double or multiple questions
5. Don't ask leading questions

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4. Don'ts on questioning

1. Don't ask overloaded or long questions
2. Don't repeat tugging questions frequently --- "What else?" "Who else?"
3. Don't examine a certain pupil with a lot of questions.
4. Don't call the name of pupil before asking a question

23

4. Don'ts on questioning

1. Don't answer a question by a pupil, if pupils should know the answer
2. Don't repeat questions or answer of pupils many times
3. Don't exploit only bright pupils or volunteers
4. Don't allow improper speech or incomplete answers

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5. Do's on questioning

1. Involve questions that are stimulating and not merely memory testing
2. Ask questions that are commensurate with pupils' abilities
3. Ask questions that are relevant to pupils' lives and environment
4. Ask questions that are sequential
5. Vary the length & difficulty of questions

25

5. Do's on questioning

1. Ask questions that are simple & clear
2. Encourage students to ask questions amongst each other and to make comments
3. Allow sufficient time for deliberation
4. Follow up incorrect answers
5. Follow up correct answers

26

5. Do's on questioning

1. Call on volunteers and non-volunteers
2. Call on disruptive students
3. Prepare four or five pivotal questions
4. Write the objective and summary of the lesson as a question, preferably as a problem
5. Change your position and move around the room

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Try improving questioning skills of your teachers!

Thank you.

Reference: Ornstein, Allan (1990), Strategies for Effective Teaching, Harper Collins Publishers Inc., New York

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Slides 03: <u>Techniques on Structuring Science & Mathematics Lessons</u>

Techniques on Structuring
Science & Mathematics Lessons

---For the 4th cycle of lesson study---

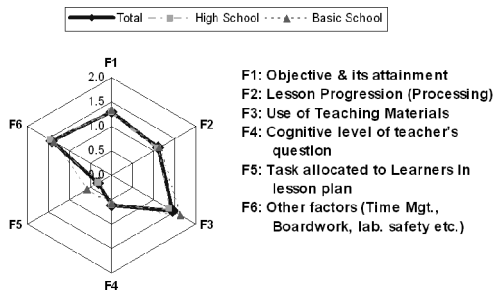SMASTE-CPD Program
Ministry of Education
Central Province

1

Why "structuring of lessons" ?

- Unsatisfactory result of base-line survey on the factors related to lesson processing & structuring
  - Low Factors on Observation of Lessons
    - F2: Lesson Progression (Processing)
    - F5: Task allocation to learners
  - Low Factors on Perception of pupils on the lesson
    - F3: Less indifference & irrelevant matters
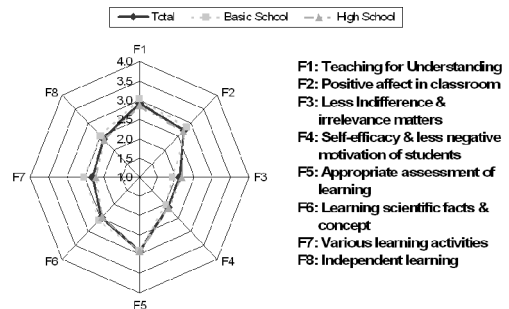   - F7: Various Learning Activities

2

Why "structuring of lessons" ?

Result on Observation of Science Lessons (N=44)

Total — High School ⋯ Basic School

F1: Objective & its attainment
F2: Lesson Progression (Processing)
F3: Use of Teaching Materials
F4: Cognitive level of teacher's question
F5: Task allocated to Learners in lesson plan
F6: Other factors (Time Mgt., Boardwork, lab. safety etc.)

Why "structuring of lessons" ?

Students' Perception on Science Lesson (N=2,029)

Total ⋯ Basic School — High School

F1: Teaching for Understanding
F2: Positive affect in classroom
F3: Less Indifference & irrelevance matters
F4: Self-efficacy & less negative motivation of students
F5: Appropriate assessment of learning
F6: Learning scientific facts & concept
F7: Various learning activities
F8: Independent learning

Component of Session

1. Objectives of the session
2. Lecture & Lesson
3. Basic Components of Lesson
4. Major Approaches for Learner-Centered Lesson in S&M
5. How to make teaching plan for certain unit/content
6. Practice of making unit teaching plan
7. Check Points

5

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1. Objectives of the Session

- To review/learn <u>basic components & approaches</u> for lesson
- To get <u>skills for arranging several approaches</u> of teaching/learning in a series of lessons
- To improve lessons at schools toward <u>learner-centered lessons</u>

6

2. Lecture & Lesson

- Lecture
  - Teacher as <u>Provider</u>, Learner as <u>Recipient</u>
  - One-direction flow of information
  - Effective on explaining
- Lesson
  - Teacher as <u>Facilitator/Guide</u>, Learner as <u>Main Actor/Beneficiary</u>
  - Several-directions flow of information
  - Effective on mutual learning

7

3. Basic Components of Lesson

A. Introduction (I)
  - ◆ To motivate learners on specific topic
  - ◆ Usually 5-10 minutes at the beginning
B. Development (D)
  - ◆ To deepen the learning through questions, discussions and activities
  - ◆ Usually 20-30 minutes
C. Conclusion (C)
  - ◆ To conclude/assess what was learnt
  - ◆ Usually 5-10 minutes

8

4. Major Approaches for Learner-Centered Lesson in S&M lessons

1. Mastery-Learning Approach <u>(ML)</u>
2. Inquiry-Discovery Approach <u>(ID)</u>
3. ASEI/PDSI Approach <u>(AP)</u>
4. Problem Solving Approach (PS)

- Mix several approaches upon;
  - the difficulty of contents
  - level & interest of learners
  - availability of learning materials

9

4-1 Mastery-Learning Approach

- Used for explaining particular topic or directing certain activity

(I) Explaining/Directing on certain topic
(D) Let learners to explain/conduct it
(C) Assess if they have mastered properly

10

4-1 Sample of ML Approach

- <u>Topic:</u> How to use ammeter
- <u>Objective:</u> PSBAT measure the size of electric current in simple circuit by using ammeter
- Pivotal Questions:
  - (I) Please listen how to use the ammeter to check the size of electric current
  - (D) Let's try to measure the current following textbook/activity sheet
  - (C) Please check if you could have correct result by using ammeter.

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4-1 Sample lesson plan of ML Approach

	Teacher's Activity	Pupils' Act.	Remarks
I	Please listen how to use the ammeter to check the size of electric current.	(Put predicted response of pupils.)	(Put remarks if necessary)
D	Let's try to measure the current following textbook/activity sheet.		
C	Please check if you could have correct result by using ammeter.		

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4-2 Inquiry-Discovery Approach

- Used for letting learners find new concept through discussion or activity

(I) Motivate learners on certain topic
(D) Give pivotal question to lead them into activity or discussion
(C) Let learners to conclude what they have found/discovered

13

4-2 Sample of ID Approach

- Topic: Combustion (Oxidation)
- Objective: PSBAT discover increase of the mass of object on combustion.
- Pivotal Questions:
  - (I) Can we burn steel wool?
  - (D) How does the mass of steel wool change after being burnt? Will it become lighter, heavier of unchanged?
  - (D) How can we confirm it?
  - (C) From the result of experiment, what can you conclude about the change of mass on burning?

14

4-2 Sample lesson plan of ID Approach

	Teacher's Activity	Pupils' Act.	Remarks
I	Can we burn steel wool?		
D	How does the mass of steel wool change after being burnt? Will it become lighter, heavier of unchanged? How can we confirm it?		
C	From the result of experiment, what can you conclude about the change of mass on burning?		

15

4-3 ASEI/PDSI Approach

- Used for making learners experiencing series of practical works as tools for learning/understanding

(I) Motivate learners on certain topic
(D) Let learners conduct several kinds of small scale activities
(C) Confirm result

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4-3 Sample of AP Approach

- Topic: Structure of Atom
- Object: PSBAT show the structure of atoms by using drawings and models.
- Pivotal Questions:
  - (I) What element composes an atom?
  - (D) Let's draw a simple structure of any atom on periodical table.
  - (D) Compare the structure of small atoms and big atoms. How are they different?
  - (D) How can we explain those difference using plastic balls as models?
  - (C) Summarize the rule on the structure of atoms.

17

4-3 Sample lesson plan of AP Approach

	Teacher's Activity	Pupils' Act.	Remarks
I	What element composes an atom?		
D	Let's draw a simple structure of any atom on periodical table. Compare the structure of small atoms and big atoms. How are they different? How can we explain those difference using plastic balls as models? (below omission)		

18

4-4 Problem Solving Approach

- Giving main problem to learners and letting them to find the best/better solution on it

(I) Give problem to learners
(D) Guide learners to find the solution
(C) Let learners conclude what they have found

19

4-4 Sample of PS Approach

- Topic: Area of Trapezoid
- Objective: PSBAT think out the method for calculating area of trapezoid.
- Pivotal Questions:
  (I) What is the feature of trapezoid?
  (D) How can we calculate the area of trapezoid?
  (D) Whose method is the best way of calculating the area of trapezoid?
  (C) What formula can we find from our trials for calculation?

20

4-3 Sample lesson plan of PS Approach

	Teacher's Activity	Pupils' Act.	Remarks
I	What is the feature of trapezoid?		
D	How can we calculate the area of trapezoid? Whose method is the best way of calculating the area of trapezoid?		
C	What formula can we find from our trials for calculation?		

21

5. How to make teaching plan for specific unit/content

1. Clarify the number of periods (lessons) which can be used for the unit/content.
2. State the concept/contents you have to cover in that content
3. Chose approach to each period
4. Confirm if several approaches are mixed and arranged

22

Sample of Teaching Plan for Unit/Content

- Subject: High School Science
- Unit: General Physics
  Content:
    1.1 Length and time
    1.2 Speed, velocity and acceleration
    1.3 Mass and weight
    1.4 Density
    1.5 Forces

    Each content has series of Objectives in Syllabus

23

Content: 1.3 Mass & Weight (3 periods)

1.3.1	Explain that mass is a measure of the amount of ----	Mastery-Learning (ML) Approach
1.3.2	Explain the concept of weight	
1.3.3	Demonstrate understanding that two weights ---	Inquiry-Discovery (ID) Approach
1.3.4	Use appropriate balances to measure-	
1.3.5	Determine centre of mass of an object	Problem-Solving (PS) Approach
1.3.6	Describe the effect of the position of centre of mass	

24

Content: 1.3 Mass & Weight

1.3.1	Explain that mass is a measure of the amount of ----	ML approach
1.3.2	Explain the concept of weight	

Pivotal Questions for Lesson (ML Approach)

(I) Please listen what is a mass.
(D) Let's try to measure the mass of some objects.
(C) Please check if your group could have measure the correct masses of objects.

1.3.5	an object	PS approach
1.3.6	Describe the effect of the position of centre of mass	25

Content: 1.3 Mass & Weight

1.3.1	Explain that mass is a measure of the amount of ----	ML approach
1.3.2	Explain the concept of weight	

Pivotal Questions for Lesson (ID Approach)

(I) Are there any differences between the mass and weight? Why?
(D) How will the weight and mass change, if we take the objects to the place of different gravity?
(C) What did you find on the difference between weight and mass?

	position of centre of mass	26

Content: 1.3 Mass & Weight

1.3.1	Explain that mass is a measure of the amount of ----	ML approach

Pivotal Questions for Lesson (PS Approach)

(I) Which truck do you think more stable? Why?
(D) Here are two shapes of board. Using this materials, how can you determine the center of mass of the board?
(C) How can we explain the effect of the position of center of mass?

1.3.5	Determine centre of mass of an object	PS approach
1.3.6	Describe the effect of the position of centre of mass	27

6. Practice

1. Chose any unit/content of Science or Mathematics and prepare "Teaching plan" with arranging several approaches of teaching/learning.

2. Pick up one period of lesson from your teaching plan and prepare pivotal questions for each component (I, D, C) of that lesson.

28

7. Check Your Unit Plan

1. Are the several approaches mixed and arranged in the unit/content plan?
2. Is there consistent flow of thought for learning series of lessons?
3. Is the flow of thought considered from the view of learners?
4. Are the appropriate periods (time) allocated to each period of lesson?

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Enjoy structuring of your lessons with your teachers!

Thank you!

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Slides 04: <u>Facilitation of Post-demo discussion of teachers</u>

Facilitation of Post-Demo Discussion of Teachers

SMASTE-CPD
Ministry of Education
Central Province

1

Objective of Post-Demo Discussion

- To improve knowledge, skills & attitudes of teachers in teaching
- To strengthen positive attitude of learning and teamwork of teachers in a school

2

Recommended Flow of Discussion

1. Asking comments from Demo Teacher
    1. If the lesson was conducted as planned
    2. If there were any findings or concerns in the lesson
    3. How he/she felt the learning and behavior of pupils in the lesson

3

2. Asking comments from Observers
    1. How was a preparation?
    2. How was an introductory part?
    3. How was a development part?
    4. How was a concluding part?
    5. Were objectives attained? Why?
    6. How were the questions of teacher?

4

6. How was a use of teaching materials?
7. How were the participation of pupils?
8. Others
    - Time Management
    - Blackboard Work
    - Teacher's Attitude & Behavior

5

3. Discussing how to improve
    3. Which point can be improved?
    4. What alternative can be considered?
    5. What outputs can be expected by the improvement?
4. Confirming what are the learning of the meeting

6

5 Points for Effective Critiquing

1. Atmosphere
2. Common Understanding of Objective
3. Focus on Improvement
4. Integration of Ideas
5. Records of Outputs

7

Please Enjoy your Discussion!!!

8

Slides 05: <u>Frequently Asked Questions (FAQ) on Implementation of SMASTE-CPD Program</u>

**15 Frequently Asked Questions (FAQ)
on Implementation of SMASTE-CPD Program**

1

- Q1. How many demonstration lessons should one school/zone need to conduct in a month?

- Q2. How many days in a month should we give for teachers in a school to conduct CPD meetings for lesson study?

2

- Q3. Can we have school CPD meetings for discussing problems at school instead of doing lesson study?

- Q4. Our school has only two science teachers. Can we make group of teachers with neighboring schools as cluster?

3

- Q5. Can we have lesson study activities at school without SMASTE facilitators?

- Q6. Can we select one of the teachers in my school as facilitator for our school-CPD activities?

4

- Q7. Can we omit the making of lesson plan during demonstration lesson because teachers are busy and don't have enough time?

- Q8. Are there any specific formats for recording CPD activities at school or can we make our own report?

5

- Q9. Can we change the geographic area assigned to SMASTE facilitators anytime because some schools are too far to visit regularly?

- Q10. Can we use materials and facilities in our resource centers for conducting lesson study?

6

- Q11. Can we have demonstration lesson at a Resource Center instead of using actual classroom?

- Q12. Can we conduct demonstration lesson using the teachers in my school instead of using pupils?

7

- Q13. Teachers in my school tend to spend a lot of time on planning demonstration lesson in lesson study cycle. Is it a good sign or bad sign in terms of implementing effective lesson study?

8

- Q14. Teachers for other subjects in my school want to join lesson study of science teachers. Am I allowed to let them join?

- Q15. As a headteacher, am worried if my teachers would finish all the topics in a year, because they have spent time for their lesson study. Is there any good advice for this?

9

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