Instructional Techniques in J.S.S. under UBE Programme

A paper presented at a workshop organised by HoneyMoon Ventures for Principals, Vice Principals and teachers in Junior Secondary Schools in Kwara State

By

Yusuf, A. (Ph. D)

Department of Arts and Social Sciences Education

University of Ilorin, Ilorin.

Introduction

I will like to start this paper presentation with the golden words of Saskatchewan Education (1988) that what children learn depends not only on what they are taught but also on how they are taught, their developmental level, and their interests and experiences. These beliefs require that much closer attention be paid to the methods chosen for presenting material. Planning a lesson involves a number of instructional decisions. The teacher must identify the following: the content and processes to be addressed, the strengths, needs, and interests of students, the common essential learning that could be incorporated, and the most effective instructional approaches. Such decisions are critical and must be made consciously and purposefully. The main value of the 'human teacher' is the he is a resource. What will determine the effectiveness of his student learning is his skilfulness and creativity in identifying and selecting the methods of presenting what he has identified to be taught. There are a number of forms of interaction between teachers and students and among students themselves that the teacher can employ.

Teaching is a crucial part of formal education and according to Lawal (2004), it must be purposeful and systematic. An understanding of teaching is fundamental in guiding our behaviour as teachers. It helps us to determine the appropriateness of certain activities we engage in, and those we call our pupils to

engage in. One main problem that is usually encountered in defining teaching is determining the connection between teaching and learning. According to Glickman (1991), effective teaching is not a set of generic practices, but instead is a set of context-driven decisions about teaching. Effective teachers do not use the same set of practices for every lesson. Instead, what effective teachers do is constantly reflect about their work, observe whether students are learning or not, and, then adjust their practice accordingly. Teaching is informed decision making. Everyday in their classrooms teachers make decisions about instructional alternatives, student learning, and curricular content. As indicated earlier in this document, there are few occasions when only one instructional approach will bring about the desired outcomes. When two or three options are available, the criteria used to make the final professional judgments become increasingly significant.

Choosing from among the models and strategies of instruction and the vast array of teaching methods is a complex task. It may help to be aware of the broad guidelines for instructional choices written by Carl Rogers (1969) over two decades ago:

(a) The teacher is responsible for setting and maintaining the climate of the classroom.

(b) The teacher helps set the purposes for individuals and the group as a whole, in the classroom.

(c) The teacher should believe learners have the desire to realize the purposes that are meaningful to them, and that this is a strong motivational force that can lead to significant learning.

(d) The teacher organizes and makes available the widest range of learning resources.

(e) The teacher is a flexible resource for individuals and the class group.

(f) The teacher is a participant learner who does not have to know and tell it all.
(g) The teacher can take the initiative to share his or her thoughts and feelings with students, although this must not impose a reciprocal demand.

(h) The teacher should be sensitive to expressions of deep or strong feelings.

(i) The teacher recognizes and accepts his or her limitations as a learning facilitator.

In addition, several variables must be considered when selecting the instructional models, strategies, and methods to use in a course, unit, or lesson. These variables include:

the student outcomes and experiences desired;

the learning sequence (deductive or inductive) that is appropriate;

the degree of student choice and responsibility;

the kind of interaction pattern that is suitable;

the Common Essential Learnings to be developed;

the amount of adjustment needed for students through the Adaptive Dimension; and,

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Making instructional choices is not easy because in some situations not all the variables can be accommodated to the same extent. The teacher may have to set priorities and make compromises. Sometimes it is desirable to have variety to arouse or maintain student interest. Perhaps, due to the student's developmental stage or lack of experience, a particular instructional method may not be appropriate. In all cases, teachers must be clear about the objectives to be achieved, the body of knowledge that is the vehicle for learning, activities that may be used, how the learning product and/or process is to be demonstrated (evaluated), and application of learning to new situations. Where appropriate, students should be included in decision making around these instructional choices. It is important that the objectives, instructional methods and activities,

and evaluation be congruent. This paper therefore concentrates on the conceptual base, instructional framework, instructional models, strategies, methods, and skills.

The Conceptual Base

The aims of Universal Basic Education as expressed in the Guideline on the Implementation of UBE (2004), are central to the development of Universal Basic Education (UBE) curriculum. Figure 1 illustrates the pervasive influence the aims of education exert upon the areas of curriculum and instruction. In addition, it demonstrates how the Common Essential Learnings and the Adaptive Dimension link the aims of education with the educational environment. The strong relationship between the Common Essential Learnings (C.E.L.s) and the Adaptive Dimension is that they are central to effective instructional decision making. They are, in many respects, the "bond" that ties the distinct elements of curriculum together and integrates curriculum and instruction.

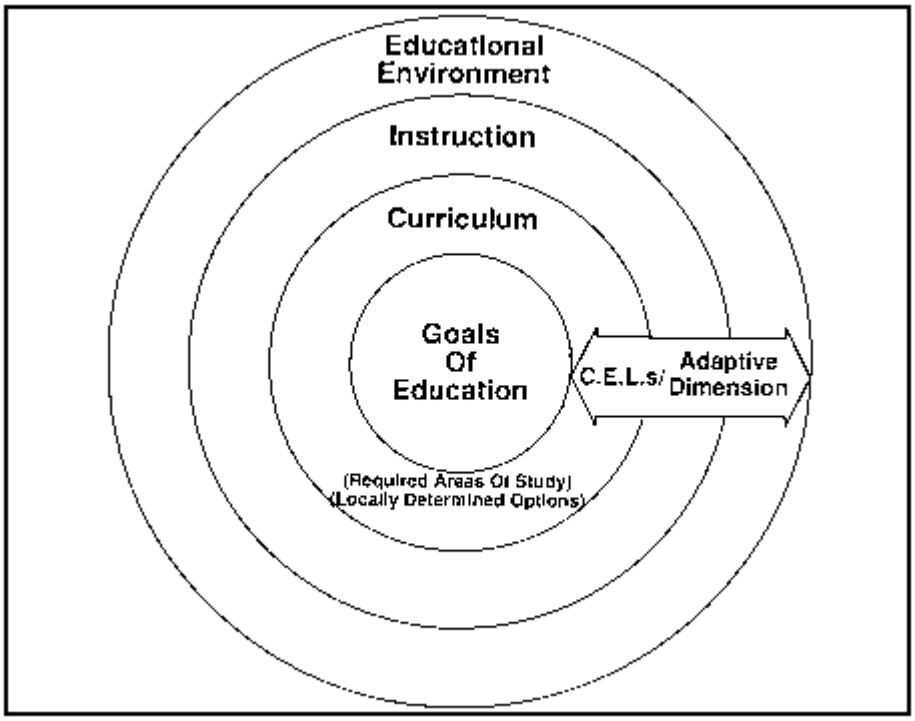

Figure 1 Conceptual Base for Core Curriculum

The instructional approaches should be flexible enough to incorporate the Common Essential Learnings and at the same time to accommodate individual student needs, abilities, interests, and strengths through the Adaptive Dimension. The following discussion focuses specifically upon the instructional portion of the Conceptual Base.

The Instructional Framework

The Instructional Framework, identifies and illustrates the interrelationship among instructional approaches that, properly used, are acknowledged to be consistent with sound educational practice. The approaches are referenced to the aims of education and apply to the objectives of the various curricula. It also illustrates the levels of approaches in instruction ranging from an instructional model, a broad approach, to an instructional skill, which represents a specific teaching behaviour or technique. Within each level the potential exists for developing both the science and the art of teaching as shown in Figure 2.

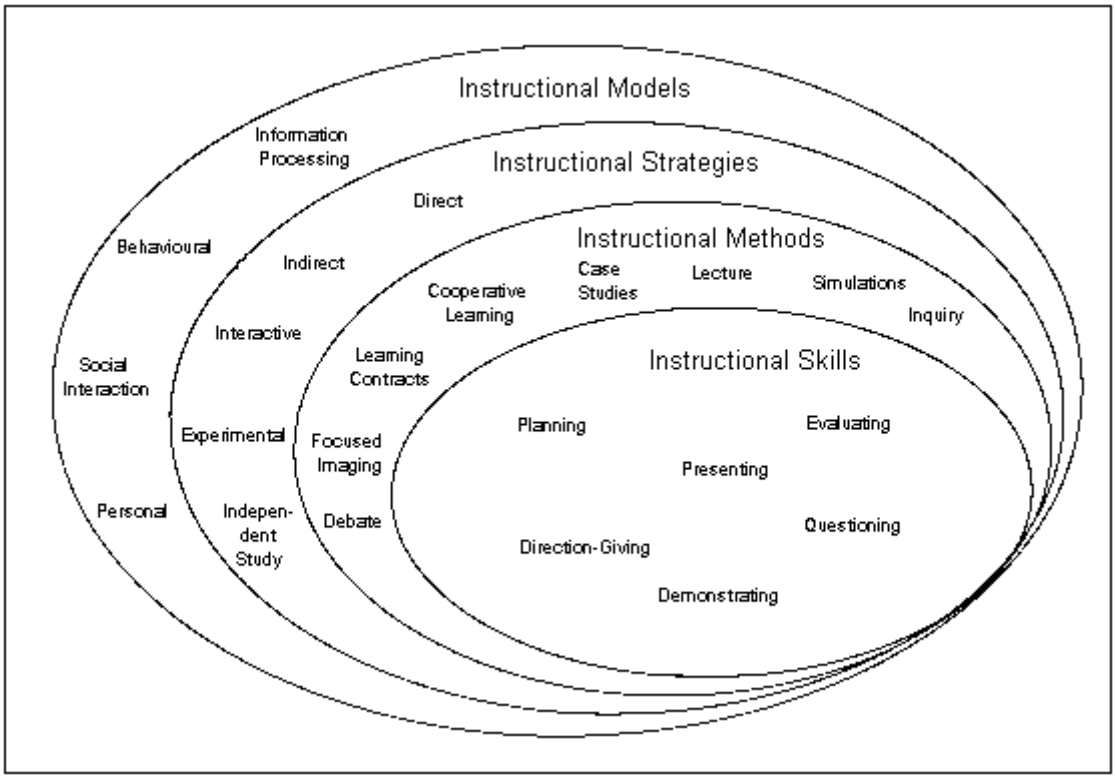

Fig. 2: Instructional Frame work adopted from Saskatchewan (1988)

Defining the Instructional Framework

The following definition of terms will help to interpret the framework and to clarify the relationships between and among the levels.

Instructional Models: Broadest levels of instructional practices and present a philosophical orientation to instruction. Models are used to select and to structure teaching strategies, methods, skills, and student activities for a particular instructional emphasis. Joyce and Weil (1986) identify four models: information processing, behaviourial, social interaction, and personal.

Instructional Strategies: Within each model several strategies can be used. Strategies determine the approach a teacher may take to achieve learning objectives. Strategies can be classed as direct, indirect, interactive, experiential, or independent.

Instructional Methods: Used by teachers to create learning environments and to specify the nature of the activity in which the teacher and learner will be involved during the lesson. While particular methods are often associated with certain strategies, some methods may be found within a variety of strategies.

Instructional Skills: The most specific instructional behaviours. These include such techniques as questioning, discussing, direction-giving, explaining, and demonstrating. They also include such actions as planning, structuring, focusing, and managing.

The Instructional Framework is intended to encourage teachers to examine their own instructional practice. Reflective assessment of the use of strategies, methods, and skills may lead teachers to broaden and deepen their repertoire of instructional approaches. Expanding the knowledge and expertise regarding various instructional approaches can enrich the artistry of teaching and, in turn, enhance the effectiveness of instruction. Figure 3 illustrates the relationship among instructional models, strategies, methods, and skills.

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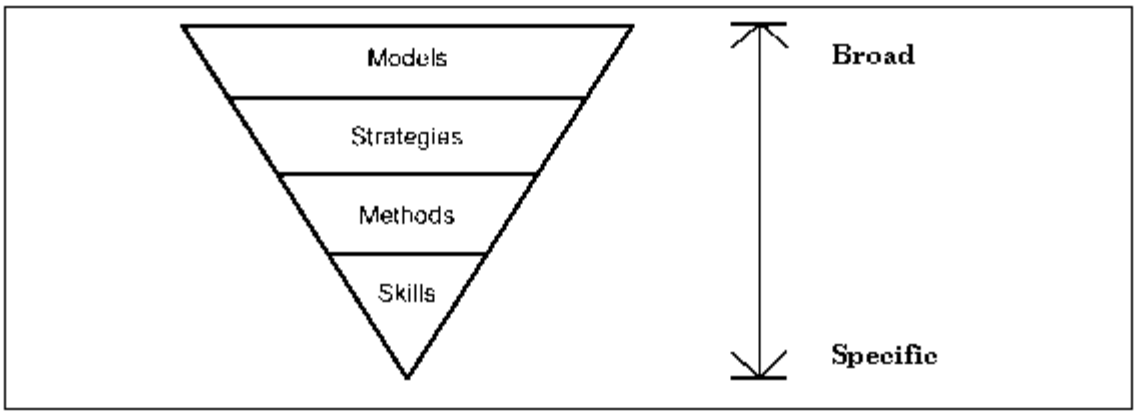

Figure 3. Relationship Among Instructional Modesl, Strategies, Methods, and Skills

Instructional Models

Joyce and Weil (1986) present four broad models for instruction. These models are defined as follows**.**

Information Processing: Emphasizes the acquisition, mastery, and processing of information. The cognitive functioning of the student is the focus.

Personal: Emphasis in this model is on the development of the individual's self concept. This involves development of the processes an individual uses to build and organize his or her unique self. The focus on a strong, realistic self concept helps to build productive relationships with others and the environment.

Social Interaction: Emphasizes the personal and societal relationships among people. The focus is on improving the student's ability to relate to others, to engage in democratic processes, and to work productively in society.

Behavioural: Emphasizes changing the visible behaviour of the learner to be consistent with his or her own self concept. As a result of its basis in the stimulus control/reinforcement theories, the behavioral model of instruction stresses that learning tasks should be broken into a series of small, sequenced tasks and behaviours.

The preceding four models are not necessarily exclusive. A unit of instruction might draw from several of the models, while a single lesson might incorporate aspects of more than one model.

Instructional Strategies

Decision making regarding instructional strategies requires teachers to focus on curriculum, the prior experiences and knowledge of students, learner interests, student learning styles, and the developmental levels of the learner. Such decision making relies on ongoing student assessment that is linked to learning objectives and processes. Although instructional strategies can be categorized, the distinctions are not always clear-cut. For example, a teacher may provide information through the lecture method (from the **direct instruction** strategy) while using an interpretive method to ask students to determine the significance of information that was presented (from the **indirect instruction** strategy). Five categories of instructional strategies and the interrelationship between and among strategies are illustrated in Figure 4. Explanations of the five categories follow.

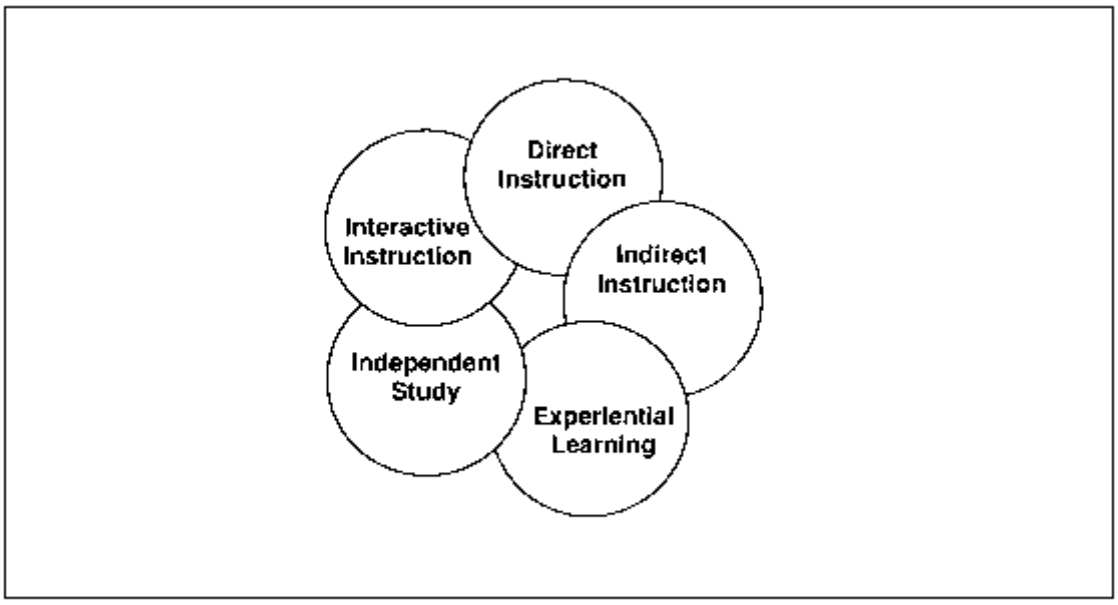

Figure 4. Instructional Strategies

Direct Instruction

The direct instruction strategy is highly teacher-centred and is among the most commonly used. This strategy includes methods such as lecture, didactic questioning, explicit teaching, practice and drill, and demonstrations. The direct instruction strategy is effective for providing information or developing step-by-step skills. This strategy also works well for introducing other teaching methods, or actively involving students in knowledge construction. Direct instruction is usually deductive. That is, the rule or generalization is presented and then illustrated with examples. While this strategy may be considered among the easier to plan and to use, it is clear that effective direct instruction is often more complex than it would first appear.

Direct instruction methods are widely used by teachers, particularly in the higher grades. The predominant use of direct instruction methods needs to be evaluated, and educators need to recognize the limitation of these methods for developing the abilities, processes, and attitudes required for critical thinking, and for interpersonal or group learning. Student understanding of affective and higher level cognitive objectives may require the use of instructional methods associated with other strategies. To ensure that the objectives of education are achieved, teachers will need to employ a variety of instructional strategies.

Indirect Instruction

Inquiry, induction, problem solving, decision making, and discovery are terms that are sometimes used interchangeably to describe indirect instruction**.** In contrast to the direct instruction strategy, indirect instruction is mainly student-centred, although the two strategies can complement each other. Examples of indirect instruction methods include concept formation, concept attainment, cloze procedure, problem solving, and guided inquiry. Indirect instruction seeks a high level of student involvement in observing, investigating, drawing inferences from data, or forming hypotheses. It takes advantage of students' interest and curiosity, often encouraging them to generate alternatives or solve problems. It is flexible in that it frees students to explore diverse possibilities and reduces the

fear associated with the possibility of giving incorrect answers. Indirect instruction also fosters creativity and the development of interpersonal skills and abilities. Students often achieve a better understanding of the material and ideas under study and develop the ability to draw on these understandings.

In indirect instruction, the role of the teacher shifts from lecturer/director to that of facilitator, supporter, and resource person. The teacher arranges the learning environment, provides opportunity for student involvement, and, when appropriate, provides feedback to students while they conduct the inquiry (Martin, 1983). Indirect instruction relies heavily on the use of print, non-print, and human resources. Learning experiences are greatly enhanced through cooperation between teachers, and between teachers and the teacher-librarians.

The indirect instruction strategy can be used by teachers in almost every lesson. This strategy is most appropriate when:

thinking outcomes are desired;

attitudes, values, or interpersonal outcomes are desired;

process is as important as product;

students need to investigate or discover something in order to benefit from later instruction;

there is more than one appropriate answer;

the focus is personalized understanding and long term retention of concepts or generalizations;

ego involvement and intrinsic motivation are desirable;

decisions need to be made or problems need to be solved; and,

life-long learning capability is desired.

In order for students to achieve optimum benefits during indirect instruction, it may be necessary for the teacher to pre-teach the skills and processes necessary to achieve the intended learning outcomes. Skills and processes include observing, encoding, recalling, classifying, comparing/contrasting,

inferring, interpreting data, predicting, elaborating, summarizing, restructuring, and verifying.

Indirect instruction, like other strategies, has disadvantages. Indirect instruction is more time consuming than direct instruction, teachers relinquish some control, and outcomes can be unpredictable and less safe. Indirect instruction is not the best way of providing detailed information or encouraging step-by-step skill acquisition. It is also inappropriate when content memorization and immediate recall is desired.

Interactive Instruction

Interactive instruction relies heavily on discussion and sharing among participants. Seaman and Fellenz (1989) suggest that discussion and sharing provide learners with opportunities to "react to the ideas, experience, insights, and knowledge of the teacher or of peer learners and to generate alternative ways of thinking and feeling" (p. 119). Students can learn from peers and teachers to develop social skills and abilities, to organize their thoughts, and to develop rational arguments.

The interactive instruction strategy allows for a range of groupings and interactive methods. These may include total class discussions, small group discussions or projects, or student pairs or triads working on assignments together. It is important for the teacher to outline the topic, the amount of discussion time, the composition and size of the groups, and reporting or sharing techniques. Interactive instruction requires the refinement of observation, listening, interpersonal, and intervention skills and abilities by both teacher and students.

The success of the interactive instruction strategy and its many methods is heavily dependent upon the expertise of the teacher in structuring and developing the dynamics of the group.

Experiential Learning

Experiential learning is inductive, learner centred, and activity oriented. Personalized reflection about an experience and the formulation of plans to apply learnings to other contexts are critical factors in effective experiential learning. Experiential learning occurs when learners:

participate in an activity;

critically look back on the activity to clarify learnings and feelings;

draw useful insights from such analysis; and,

put learnings to work in new situations. (Pfeiffer & Jones, 1979)

Experiential learning can be viewed as a cycle consisting of five phases, all of which are necessary:

experiencing (an activity occurs);

sharing or publishing (reactions and observations are shared);

analyzing or processing (patterns and dynamics are determined);

inferring or generalizing (principles are derived); and,

applying (plans are made to use [earnings in new situations).

The emphasis in experiential learning is on the process of learning and not on the product. A teacher can use experiential learning as an instructional strategy both in and outside the classroom. For example, in the classroom students can build and stock an aquarium or engage in a simulation. Outside the classroom they can, for example, observe courtroom procedures in a study of the legal system, or conduct a public opinion survey. Experiential learning makes use of a variety of resources.

There are obvious limitations to the kinds of experiences that students may gain first hand. Concern for student safety, limitations on financial resources, and lack of available time are some of the reasons this strategy cannot be applied in all situations. The benefits to students, however, justify the extra efforts this strategy may require.

Experiential learning is an effective instructional strategy if direct or "hands-on" experience is needed before teaching methods that involve iconic learning (for example, looking at pictures) or symbolic learning (for example, listening to the teacher talk). Experiential learning greatly increases understanding and retention in comparison to methods that solely involve listening, reading, or even viewing (McNeil & Wiles, 1990). Students are usually more motivated when they actively participate and teach one another by describing what they are doing.

Independent Study

For the purposes of this paper, independent study refers to the range of instructional methods which are purposefully provided to foster the development of individual student initiative, self-reliance, and self-improvement. While independent study may be initiated by student or teacher, the focus here will be on planned independent study by students under the guidance or supervision of a classroom teacher. In addition, independent study can include learning in partnership with another individual or as part of a small group. The importance of independent study is captured in the following statement:

Independent learning has implications for responsible decision-making, as individuals are expected to analyze problems, reflect, make decisions and take purposeful actions. To take responsibility for their lives in times of rapid social change, students need to acquire life-long learning capability. As most aspects of our daily lives are likely to undergo profound changes, independent learning will enable individuals to respond to the changing demands of work, family and society. (Saskatchewan , 1988, p. 53)

One of the UBE goal is to help students become self-sufficient and responsible citizens by enhancing individual potential. Schools can help students to grow as independent learners. However, if the knowledge, abilities, attitudes, and processes associated with independent learning are to be acquired, they must be taught and enough time must be provided for students to practice. Use of independent study methods may begin as early as kindergarten and should

continue to be used through all the grades. Students should be able to continue to learn after they have left the structured learning environment of the school.

Independent study encourages students to take responsibility for planning and pacing their own learning. Independent study can be used in conjunction with other methods, or it can be used as the single instructional strategy for an entire unit. The factors of student maturity and independence are obviously important to the teacher's planning.

Adequate learning resources for independent study are critical. The teacher who wishes to help students become more autonomous learners will need to support the development of their abilities to access and handle information. It is important to assess the abilities students already possess. These abilities often vary widely within any group of students. Specific skills and abilities may then be incorporated into assignments tailored to the capabilities of individual students. The co-operation of the teacher librarian and the availability of materials from the resource centre and the community provide additional support. Independent study is very flexible. It can be used as the major instructional strategy with the whole class, in combination with other strategies, or it can be used with one or more individuals while another strategy is used with the rest of the class.

Instructional Methods

After deciding on appropriate instructional strategies, a teacher must make decisions regarding instructional methods. As is the case with strategies, the distinction between methods are not always clear cut although they are categorized for the purposes of this paper. Figure 5 illustrates how various methods relate to the five strategies presented in the previous section. It should be noted that the methods appearing in the diagram are examples only, and are not intended to be inclusive of all instructional methods. A sampling of instructional methods with accompanying explanations is presented in this section. The methods are organized by instructional strategy, as they appear in

Figure 5.

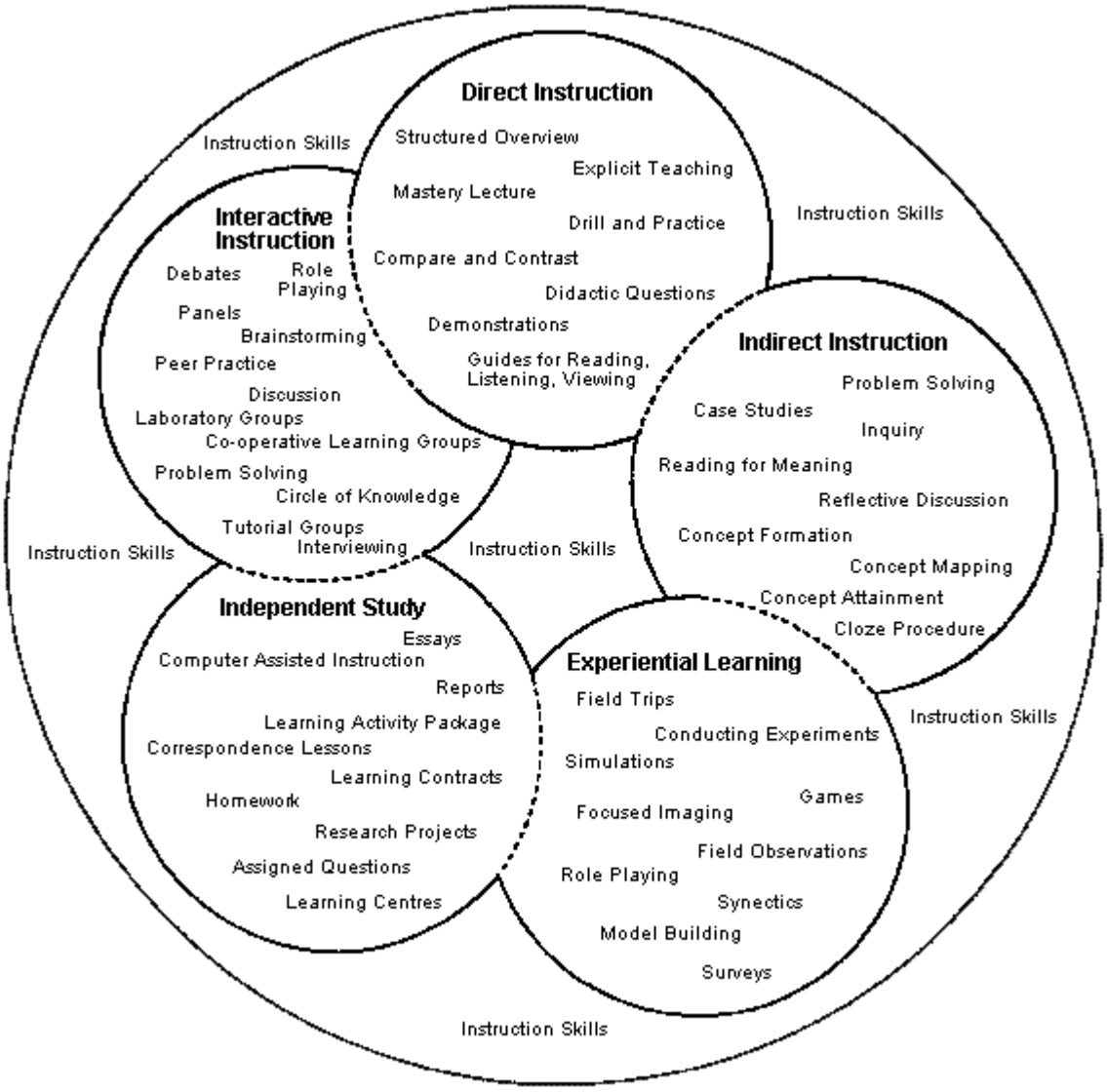

Figure 5. Instructional Strategies

Direct Instruction

Lecture

Lecture is a valuable part of a teacher's instructional repertoire if it is not overused and if it is not used when other methods would be more effective. If the presenter is knowledgeable, perceptive, engaging, and motivating, then lecture can stimulate reflection, challenge the imagination, and develop curiosity and a sense of inquiry. Criteria for the selection of the lecture method should include

the types of experiences students will be afforded and the kinds of learning outcomes expected**.** Because lecture is teacher-centred and student activity can be mainly passive, the attention span of students may be limited. Many students, because of learning style preferences, may not readily assimilate lectured content. In addition, lectured content is often rapidly forgotten.

Didactic Questioning

Didactic questioning offers the teacher a way to structure the learning process (McNeil & Wiles, 1990). Didactic questions tend to be convergent, factual, and often begin with "what," "where," "when," and "how." They can be effectively used to diagnose recall and comprehension skills, to draw on prior learning experiences, to determine the extent to which lesson objectives were achieved, to provide practice, and to aid retention of information or processes. Teachers should remember that didactic questions can be simplistic, can encourage guessing, and can discourage insightful answers or creativity. However, effectiveness of this method can be increased by the appropriate addition of "why" questions, and the occasional use of "what if" questions.

Indirect Instruction

Concept Formation

Concept formation provides students with an opportunity to explore ideas by making connections and seeing relationships between items of information. This method can help students develop and refine their ability to recall and discriminate among key ideas, to see commonalities and identify relationships, to formulate concepts and generalizations, to explain how they have organized data, and to present evidence to support their organization of the data involved.

In this instructional method, students are provided with data about a particular concept. These data may be generated by the teacher or by the students themselves. Students are encouraged to classify or group the information and to give descriptive labels to their groupings. By linking the examples to the labels and by explaining their reasoning, the students form their own understanding of the concept. Concept formation lessons can be highly

motivational because students are provided with an opportunity to participate actively in their own learning. In addition, the thinking process involved helps them create new and expanded meaning of the world around them as they organize and manipulate information from other lessons and contexts in new ways.

Inquiry

Inquiry learning provides opportunities for students to experience and acquire processes through which they can gather information about the world. This requires a high level of interaction among the learner, the teacher, the area of study, available resources, and the learning environment. Students become actively involved in the learning process as they:

act upon their curiosity and interests;

develop questions;

think their way through controversies or dilemmas;

look at problems analytically;

inquire into their preconceptions and what they already know;

develop, clarify, and test hypotheses; and,

draw inferences and generate possible solutions.

Questioning is the heart of inquiry learning. Students must ask relevant questions and develop ways to search for answers and generate explanations. Emphasis is placed upon the process of thinking as this applies to student interaction with issues, data, topics, concepts, materials, and problems. Divergent thinking is encouraged and nurtured as students recognize that questions often have more than one "good" or "correct" answer. Such thinking leads in many instances to elaboration of further questions. In this way students come to the realization that knowledge may not be fixed and permanent but may be tentative, emergent, and open to questioning and alternative hypotheses.

Deductive Inquiry

The focus in deductive inquiry is on moving students from a generalized principle to specific instances that may be subsumed logically within generalizations. The process of testing generalized assumptions, applying them, and exploring the relationships between, specific elements is stressed. The teacher co-ordinates the information and presents important principles, themes, or hypotheses. Students are actively engaged in testing generalizations, gathering information, and applying it to specific examples. Deductive inquiry is based upon the logical assimilation and processing of information.

Inductive Inquiry

The information-seeking process of the inductive inquiry method helps students to establish facts, determine relevant questions, develop ways to pursue these questions, and build explanations. Students are invited to develop and support their own hypotheses.

Through inductive inquiry, students experience the thought processes which require them to move from specific facts and observations to inferences. To help students accomplish this, the teacher selects a set of events or materials for the lesson. The student reacts and attempts to construct a meaningful pattern based on personal observations and the observations of others. Students generally have some kind of theoretical frame when they begin inductive inquiry. The teacher encourages students to share their thoughts so that the entire class can benefit from individual insights.

Interactive Instruction

A. Classroom Group Interaction

The teacher often works with the class as a whole, particularly when presenting information or modelling a process. The class is viewed as a work group, engaged in a productive academic enterprise. Teachers should establish a positive, productive learning climate and provide group participation training.

Students need to acquire group process and discussion skills if they are to learn through the interactive process. Students that have been helped to develop these processes and abilities often do better academically because positive interaction fosters self concept. The most frequently used classroom group interaction methods are discussion, and question and answer. These are described below.

Discussion

Educators recognize that knowledge is more than correct answers and can be gained through creative inquiry and active participation by students. Discussion can be meaningfully adapted to many classroom situations. For example, whole class discussion may occur if, during a presentation, the teacher notices that students are particularly interested in a topic and initiates a discussion. Whole class discussion can help build a positive classroom climate and lead to student interest in a school subject. In addition, the teacher can model active listening and build on student responses.

Effective discussions are normally based on material familiar to the students. The problem or issue can be one that does not require a particular response, or one where it is important for students to discover an answer. The teacher should stress with students that opinions must be supported, and then ensure that the terms and concepts needed are understood. Discussion should conclude with consensus, a solution, clarification of insights gained, or a summary (preferably one provided by the students). Students should have a clear understanding of the major points and their applications to other situations. It should be noted that some discussions can lead students to conduct further research.

Question and Answer

When the question and answer method is used effectively, students feel they are being personally addressed by the teacher. When responding, students should speak, not only to the teacher, but also to their peers. Frequent use should be made of probes, prompts, and redirecting techniques. 'Wait time," the pause between asking a question and soliciting a response, should be used to

advantage by the teacher to increase **participation and improve** the quality of student responses. An important aspect of the question and answer method is

the wording of questions in order to help students think more deeply about the material or unit under study.

Small Group Interaction

Small groups are particularly effective when the intention is to develop social as well as academic abilities. In a small group, everyone has an opportunity to contribute. Students get more chances to talk, listen, and receive feedback than would be possible in whole-class instruction.

Co-operative Learning Group

The basic elements of co-operative learning can be considered essential to all interactive methods. Student groups are small, usually consisting of two to six members. Grouping is heterogeneous with respect to student characteristics. Group members share the various roles and are interdependent in achieving the group learning goal. While the academic task is of primary importance, students also learn the importance of maintaining group health and harmony, and respecting individual views.

A substantial body of research has shown that co-operative learning is effective. Johnson and Johnson (1989) state:

> *Co-operative learning experiences, compared to competitive and individualistic ones, promote higher achievement, greater motivation, more positive interpersonal relations among students, more positive attitudes toward the subject area and teacher, greater self esteem and psychological health, more accurate perspective taking, and greater social skills (p. 8-9).*

In addition, Slavin (1987) indicates that two conditions must be established if cooperative learning is to fulfill its claim of enhancing student achievement substantially. Slavin believes that "students must be working toward a common goal . . . [and] success at achieving the goal must depend on the individual learning of all group members" (p.9). Co-operative learning can take place in a variety of circumstances. For example, brainstorming and tutorial groups, when employed as instructional strategies, provide opportunities to develop co-operative learning skills and attitudes.

Experiential Learning

Simulation

To initiate a simulation, the teacher presents an artificial problem, situation, or event that represents some aspect of reality. Because the experience is a simulation, any serious risk or complication that may be associated with the real life phenomenon is removed. In addition, the level of abstraction or complexity is purposefully reduced so that students may become directly involved with underlying concepts. Simulation also allows for types of experimentation that cannot take place in the real environment. The simulation method may involve the use of models, game formats, structured role plays, or an interactive computer or video program. In most instances, students are easily motivated to participate.

During simulation activities, students become active participants in the learning process. A variety of learning objectives may be associated with the simulation. Some focus on the application of previous knowledge, skills, and abilities, while others emphasize the acquisition of new knowledge, understandings, insights, and appreciations. Many simulation activities promote and develop critical and creative thinking or involve interactions which develop interpersonal and social skills, attitudes, and values.

Focused Imaging

Imaging, the process of internally visualizing an object, event, or situation, has the potential to nurture and enhance a student's creativity (Bagley & Hess,

1987). Imaging enables students to relax and allow their imaginations to take them on journeys, to "experience" situations first hand, and to respond with their senses to the mental images formed. In the classroom, imaging exercises nurture and develop students' creative potentials. Teachers can encourage divergent thinking by asking students to transform a teacher guided image into several others of their own creation, to imagine various solutions for spatial or design problems, or to visualize a particular scene or event and then imagine what might happen next.

Imaging provides a focus and an opportunity for open-minded exploration of new concepts in all areas of study. It can help broaden students' conceptual understanding of subject area material, especially complex concepts and processes. Imaging allows students to connect their prior experiences to new ideas under investigation.

Independent Study

Assigned Questions

Assigned questions are those prepared by the teacher to be answered by individuals or small groups of students. Students discuss their responses among one another or with the teacher. Particular positions or points-of-view should be supported by evidence. In some instances, it may be desirable for students to generate their own set of questions.

This instructional method is effective when questions are well-phrased so that answering involves more than mechanical searching and copying from a book or other reference. It can be an efficient way for the teacher to introduce or review facts, concepts, generalizations, arguments, and points-of-view. Well-selected assigned questions can stimulate higher-level thinking, problem solving, decision making, and personal reflection. Questions should allow for multiple responses. Because student abilities and learning styles differ, this method may require some adaptation in order to maximize learning for all students.

Learning Contracts

Learning contracts provide a method of individualizing instruction and developing student responsibility. They permit individual pacing so that students may learn at the rate at which they are able to master the material. Learning contracts can be designed so that students function at the academic levels most suitable to them and work with resource materials containing concepts and knowledge that are appropriate to their abilities and experiences. Although this method focuses on the individual, learning contracts also provide an opportunity for students to work in small groups. The teacher may select this approach for some students to support them as they learn to work independently.

When a student is first beginning to use learning contracts, the teacher provides learning objectives, identifies a choice of resources, and sets some basic time parameters for the project. As students become more experienced with learning contracts, the teacher may choose to involve them in setting the learning objectives. Learning contracts usually require that students demonstrate the new learning in some meaningful way, but students are provided choice in the selection of a method or activity.

Learning contracts can be highly motivating for students. As they become skilful in making appropriate choices and as they begin to assume more responsibility for their own learning, they become increasingly independent, learn to use resources to their advantage, and take pride in their ability to teach themselves and share their new learning with others.

Instructional Skills

Instructional skills are the most specific category of teaching behaviours. These are used constantly as part of the total process of instruction. They are necessary for procedural purposes and for structuring appropriate learning experiences for students. No matter how experienced or how effective a teacher may be, the development and refinement of these skills and processes is a continual challenge.

A variety of instructional skills and processes exist. Some are broader than others and more complex in their nature. Some factors which may influence their selection and application include student characteristics, curriculum requirements, and instructional methods. For the purpose of illustrating instructional skills, two examples follow: explaining and demonstrating, and questioning.

Explaining and Demonstrating

The teacher spends much classroom time explaining or demonstrating something to the whole class, a small group, or an individual. Student resource materials typically do not provide extensive explanations of concepts, and students often need a demonstration in order to understand procedures.

Explaining

Some explanations are given to help students acquire or deepen their understanding of a concept, while others help students understand generalizations. Concerning the former, the teacher must select an appropriate concept definition and appropriate examples and non-examples. Regarding the latter, Shostak (1986) suggests that an explanation can show:

a cause and effect relationship (for example, to show the effect of adding an acid to a base);

that an action is governed by a rule or law (for example, to show when to capitalize a noun);

a procedure or process (for example, to show the operation of solving a mathematical equation); or,

the intent of an activity or process (for example, to show the use of foreshadowing in drama).

Demonstrating

Much student learning occurs through observing others. A demonstration provides the link between "knowing about" and "being able to do." Research reveals that demonstrations are most effective when they are accurate, when

learners are able to see clearly and understand what is going on, and when brief explanations and discussion occur during the demonstration (Arenas, 1988).

Questioning

Among the instructional skills, questioning holds a place of prominence in many classrooms. When questioning is used well:

a high degree of student participation occurs as questions are widely distributed;

an appropriate mix of low and high level cognitive questions is used;

student understanding is increased;

student thinking is stimulated, directed, and extended;

feedback and appropriate reinforcement occur;

students' critical thinking abilities are honed; and,

student creativity is fostered.

Good questions should be carefully planned, clearly stated, and to the point in order to achieve specific objectives. Teacher understanding of questioning technique, wait time, and levels of questions is essential. Teachers should also understand that asking and responding to questions is viewed differently by different cultures. The teacher must be sensitive to the cultural needs of the students and aware of the effects of his or her own cultural perspective in questioning. In addition, teachers should realize that direct questioning might not be an appropriate technique for all students.

Questioning Technique

The teacher should begin by obtaining the attention of the students before the question is asked. The question should be addressed to the entire class before a specific student is asked to respond. Calls for responses should be distributed among volunteers and non-volunteers, and the teacher should encourage students to speak to the whole class when responding. However, the teacher must be sensitive to each student's willingness to speak publically and never put a student on the spot.

Wait Time

Wait time is defined as the pause between asking the question and soliciting a response. Providing additional wait time after a student response also allows all students to reflect on the response prior to further discussion. Increased wait time results in longer student responses, more appropriate unsolicited responses, more student questions, and increased higher order responses. It should be noted that increased wait time is beneficial for students who speak English as a second language or English as a second dialect.

Levels of Questions

While the need for factual recall or comprehension must be recognized, teachers also need to challenge students with higher level questions requiring analysis, synthesis, or evaluation. The consideration of level is applicable at all grade levels and in all subject areas. All students need the opportunity to think about and respond to all levels of questions. Teacher probes or requests for clarification may be required to move students to higher levels of thinking and deeper levels of understanding.

Conclusion

Because there are so many variables for teachers to consider when making decisions about teaching and learning, it is essential that they have a conceptual base and a framework for understanding the levels of instructional decisions. This paper described the conceptual base and an instructional framework. It provided an overview of instructional models, strategies, methods, and skills. In addition, it illustrated the inter-relatedness of these four levels of the instructional framework.

Defining and describing the instructional approaches presented in this paper has been an exciting and challenging endeavour. It has been exciting because it has helped to focus thinking about teaching and learning. It has been challenging because instruction and the adaptive dimension truly bring the elements of Core Curriculum together in a coherent whole. This paper, Instructional Strategies in J.S.S. under UBE Programme*,* in the most precise terms invites professional

educators to continue to shape that vision through reflection upon instructional practice. Supporting such reflection with a firm commitment to professional action will make the vision a reality.

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