UNIT – IV

MODELS OF TEACHING

MODELS OF TEACHING: MEANING

The term model is used to mean a teaching episode done by an experienced teacher in which a highly focused teaching behaviour is demonstrated, in it an individual demonstrating particular patterns which the trainee learns through imitation. It is a way to talk and think about instruction in which certain facts may be organized, classified and interpreted. The term model can be used for imitation, description, explanation, prediction or persuasion. Teaching models can suggest how

various, teaching and learning conditions are inter-related. The practices and technologies of teaching can be described in terms of models for solving problems in teaching-learning process.

Joyce and Weil in their book "Models of Teaching" define that "Teaching models are just instructional designs". The describe the process of specifying and producing particular environmental designs which cause the student to interact in such a way that specific changes occur in his behaviour. They also state that the models of teaching which govern the teaching activities in any school indicate the kind of realities which would be admitted in the classroom and the kinds of life views likely to be generated as the teacher and the learners work together. Bruce Joyce and Marsha Weil describe a Model of Teaching as a plan or pattern that can be used to shape curricula, to design instructional materials and to guide instruction in the classroom and other settings. Thus teaching models are just instructional designs. They describe the process and producing particular

environmental situations which cause the student to interact in such a way that

specific change occurs in his behaviour.

DEFINITION

According to N.K.Jangira and Azit Singh (1983): "A model of teaching is a set of inter-related components arranged in a sequence which provides guidelines to realize specific goal. It helps in designing instructional activities and environmental facilities, carrying out of these activities and realization of the stipulated objectives."

View of Joyce and Weil (1972): They have given three meanings of teaching models:

a) "Teaching models are just instructional designs. They describe the process of specifying and producing particular environmental situations which cause the student to interact in such a way that specific change occurs in his behavior".

ii) Teaching model is a "pattern or plan, which can be used to shape a curriculum or course, to select instructional materials and to guide a teacher's actions". Models are designed to attain specific goals; we can say that he is using model approach.

iii) "A model of teaching consists of guidelines for designing educational activities and environments. It specifies ways of teaching and learning that are intended to attain certain kinds of goals".

Nelson L Bossing (970): “Teaching model is a pattern or plan, which can be used to shape a curriculum or course, to select instructional materials and to guide a teacher’s action”. It consist guidelines for designing educational activities and environment. It specifies way of teaching and learning that are intended to achieve certain kinds of goals.

According to Morse, “Models are prescriptive teaching strategies designed to accomplish particular instructional goals”.

Robert S. Wooodworth says “To confirm in behaviour, actions and to direct one’s action according to some particular design or idea”.

According to Filburt Highet, “It is a set of inter-related components arranged in a sequence which provide guidance to realize specific goals”.

MODELS OF TEACHING: SPECIFICATIONS

Models of Teaching are designed for specific purposes-the teaching of information concepts, ways of thinking, the study of social values and so on-by asking students to engage in particular cognitive and social tasks. Some models centre on delivery by the instructor while others develop as the learners respond to tasks and the student is regarded as a partner in the educational enterprise.

These are based on the following specifications:

a- Specification of Environment- It specifies in definite terms the environmental conditions under which a student’s response should be observed.

b- Specification of operation- It specifies the mechanism that provides for the reaction of students and interaction with the environment.

c- Specification of criterion of Performance-It specify the criterion of Performance which is accepted by the students The behavioural outcome which the learner would demonstrate after completing specific instructional sequences are delineated in the teaching models

d- Specification of learning outcome- It specifies what the student will perform after completing an instructional sequence.

EFFECTS OF TEACHING BY MODELLING

Models of Teaching are really models of learning. As we help students acquire information ideas skills, values, ways of thinking, and means of expressing themselves, we are also teaching them how to learn. ln fact the most important long term outcome of instruction may be the students 'increased capabilities to learn more easily and effectively in the future, both because of the knowledge and skills they have acquired and because they have mastered learning processes.

According to Joyce and Weil, Each model results in two types of effects Instructional and Nurturant.

A- Instructional effects are the direct effects of the model which result from the content and skills on which the activities are based.

B- Nurturant effects are those which are implicit in the learning environment.

They are the indirect effects of the model.

Bandura and Walters have formulated three kind of effect in teaching by modelling:

1- Modelling effect- The learner acquires new kind of response pattern.

2- -Inhibitory and disinhibitory effect- The learner increases or decreases the frequent, latency or intensity or previously required responses.

3- Eliciting effect- The learner receives from a model merely a cue for realising a response.

Modelling effect can be seen when a teacher demonstrates to a student how to hold a pencil or write capital A and thus shows a new behaviour. Through modelling the teacher lets the student know that it is not permissible of obscene nature in art book. The eliciting effect takes place when through modelling; a teacher tries to teach students to get up when he enters the room. Thus it provides a cue eliciting a response neither new nor inhibited. Gagne feels that learning through imitation seems to be more appropriate for tasks which are a little cognitive in nature.

FUNCTIONS OF TEACHING MODELS IN TEACHING

♣ Teaching models are useful in developing social efficiency, personal abilities, cognitive abilities and behavioural aspects of the students. It helps in selecting and stimulating situations which causes the desirable changes in students.

♣ Teaching models help in guiding the teacher to select appropriate teaching techniques, strategies and methods for the effective utilization of the teaching situation and material for realizing the objectives.

♣ Teaching models help to establish teaching and learning relationship empirically. It helps in making the teaching more effective.

♣ Teaching models help in bring about desirable changes in the behaviour of the learners.

Teaching models helps in providing a theoretical rationale to the teaching, which will provide changes and rectifications in teaching.

♣ Teaching models stimulates the development of new educational innovations in teaching strategies and tactics, which may replace the existing ones in schools of today.

♣ Teaching models assist makers of materials to create more interesting and effective instructional materials and learning sources.

♣ Teaching models help in finding out ways and means of creating favourable environmental situation for carrying out teaching process.

♣ Teaching models assist teachers to develop their capacities to create conductive environment for teaching, as its nature is practical.

♣ Teaching models help in achieving desirable teacher-pupil interaction during teaching.

♣ It helps in construction of a curriculum or contents of a course.

♣ It helps in the proper selection of instruction material for teaching the prepared course or the curriculum.

♣ Teaching models help curriculum planners to plan learning activities and content material which provide a variety of educational experiences to learners.

♣ It helps in the formation of theory of teaching.

♣ It helps to establish teaching and learning relationship empirically.

♣ Teaching model evaluates the behaviour of the students. For this important task, it presents such a criterion with the help of which the changes in the students behaviours can be easily evaluated.

CHARACTERISTICS OF A TEACHING MODEL

1- **Encourage Art of Teaching**- Teaching is considered as an art. Teaching models encourages this art by providing learning environment.

2- **Development of Inherent Abilities** -Teaching models bring about the qualitative development of personality as it helps in developing human abilities. It also increases the teacher's social competency.

3- **Based on Individual Differences**- Teaching model uses the student's interest, as it is constructed on the basis of individual differences.

4- **Influenced by Philosophy**- Every teaching model is influenced by the philosophy of education. Hence, teachers formulate different models of teaching under the influence of the philosophy they believe.

5- **Answers Fundamental Questions**- In every teaching model answers to all the fundamental questions pertaining to the behaviour of students and teachers are included.

6- **Providing Appropriate Experiences**- Teaching models provides proper experiences to both teacher and student. Selecting the content and presenting it for learning before the students is the main essentiality of teaching. This difficulty is solved when a teacher presents appropriate experience before the students.

7- **Maxims of Teaching**- The basis of teaching model is the maxims of teaching. They are the foundation of each teaching model.

8- **Practice and Concentration**- The development of a teaching model is based on regular and continuous practice and concentration. The proper development of a teaching model is only possible when the assumptions are made clear by related thinking.

FUNDAMENTAL ELEMENTS OF A TEACHING MODEL

Normally majority of teaching models are based on the following six elements:

I. FOCUS

Focus is the central aspects of a teaching model. Objectives of teaching and aspects of environment generally constitute the focus of the model. Every teaching model is based on one or the other objective as its focal point. Any teaching model is developed by keeping this focal point in mind. Every teaching model differs from another in terms of its objectives. It is the nucleus of a teaching model. Every model is developed by keeping in view its focal point or objective. Every model has various phases; some particular types of competencies are developed by it.

II. SYNTAX

Syntax of the model describes the model in action. Syntax includes the sequences of steps involved in the organization of the complete programmed of teaching. It is the systematic sequence of the activities in the model. Each model has a distinct flow of phases. It means the detailed description of the model in action. In it, the teaching activities and interactions between a pupil and the teacher are determined. The syntax of any teaching model means those points which produce activities focused on educational objectives at various phases. Under syntax, the teaching tactics, teaching activities and interaction between a student and the teacher are determined in such a pattern of sequence that the teaching objectives are achieved conveniently by providing desirable environmental situations.

III. PRINCIPLES OF REACTION

Principles of Reaction tell the teacher how to regard the learner and to respond to what the learner does. This element is concerned with the way a teacher should regard and aspects respond to the activities of the students. These responses should be appropriate and selective. They provide the teacher with rules of thumb by which to select model, appropriate responses to what the student does. This element is concerned with the teacher's reaction to the student's responses. In it, he comes to know that how he has to react to the responses of the students and has to see whether the learners have been actively involved in the process, or not.

IV. THE SOCIAL SYSTEM

This element is concerned with the activities of pupil and the teacher and their mutual relationships. Every teaching model has separate objectives and will have therefore separate social systems. It is related with the interactive roles and relationship between the teacher and the student, and the kinds of norms that are observed and student behaviour which is rewarded. The Social System describes the role of and relationships between the teacher and the pupils. In some models the teacher has a dominant role to play. In some the activity is centred around the pupils, and in some other models the activity is equally distributed. This element is based on the assumption that every class is a miniature society. In it also discussed the selection of motivating strategies and tactics for the students. Naturally social system occupies a central position in making the teaching impressive and successful in relation to the previously selected objectives.

V. SUPPORT SYSTEM

Support System describes the supporting conditions required to implement the model. 'Support' refers to additional requirements beyond the usual human skills, capacities and technical facilities. The support system relates to the additional requirements other than the usual human

skills or capacities of the teacher and the facilities usually available in the ordinary classroom. Teacher requirements refer to special skills, special knowledge of the teacher and special audio-visual material like films, elf-instructional material, visit to special place etc. This includes books, films, laboratory kits, reference materials etc. It means the additional requirements beyond the usual human skill, capacities and technical facilities. In it, the evaluation is done by oral or written examination, whether the teaching objectives have been achieved or not. On the basis of this success or failure, clear idea is achieved regarding the effectiveness of strategies, tactics and techniques used during teaching.

VI. APPLICATION

It is an important element of a teaching model. It means the utility or usage of the learnt material in other situations. Several types of teaching modes are available. Each model attempts to desirable the feasibility of its use in varying contexts related with goal achievements in terms of cognitive, and affective behaviour modification.

TYPES OF TEACHING MODELS

Every teaching model has its specific objective. In order to achieve the objective of a teaching model, the teacher has to choose right type of model for achieving the particular objective. The teaching models have been classified into three main types:

1. **PHILOSOPHICAL TEACHING MODELS**: Israel Saffer had mentioned such types of models. These include

i- The Insight model (Plato) -This model is an answer to the impression model. The insight model discards the assumption that the meaning of a teaching model is merely delivering the knowledge or ideas through teaching to the mental domain of the students. According to this model the knowledge cannot be provided merely

through the expression of sense organs, but the knowledge principles of language are most important, edge of the content is also a necessity. The developer of this model was Plato. His belief was that the knowledge cannot be provided merely by speaking the words or listening them. Mental processes and language both work together.

ii - The Impression model of teaching (John Locke) -It is based on a general assumption the child's brain is like a clean slate at the time of birth. Whatever experiences are provided through teaching creates impression on child's brain. These impressions are termed as learning. In the learning process the sense organs and principles of language and given more importance. The

success and effectiveness of entire teaching process depends upon the teacher's ability and his capability to communicate.

iii - The Rule model (Kant) - The impression model and insight model have their own limitations. Their drawbacks have been removed by the rule model. In this model much importance is given to the logic power. Kant gives importance to logic, because in it following certain rules is essential. The main function of education is to develop character. The objective of rule model is to develop the logical reasoning capacities of the student. Some particular rules are followed. Planning, organisation and interaction of teaching is performed under specific rules. Cultural and moral values are developed with this model.

2. PSYCHOLOGICAL MODEL OF TEACHING: It is the assumption of psychologists that the teaching models can acquire the place of teaching theories. In short, it can be stated that the teaching models are the primitive form of teaching theories. In the psychological form of teaching models, the relationship of teaching objectives and teaching-learning activities are explained. John P. Dececco had mentioned such types of models. It includes

I. BASIC TEACHING MODEL (ROBERT GLASER)

Robert Glaser (1962) has developed a stripped-down teaching model which, with modifications, is the basic teaching model. He has used psychological laws and principles in this model. The basic teaching model divides the teaching process into four components or parts. It will be useful in several ways. **The four parts of the model represent the basic divisions, they are; Instructional objectives, Entering behavior, instructional procedure, and performance assessment.**

i. Instructional Objectives- These objectives mean those activities which a teacher is to do before teaching. In other words, the objectives of teachers and pupils are called instructional objectives. From this element of the mode, we come to know about how the instructional objectives are written in behavioural statement. This process is also known as task description. By this element, we can differentiate the objectives of schools, teachers and pupils.

ii. Entering Behaviour-Entering behaviours means those abilities or behaviours of the pupils which are necessary for the understanding of contents. In simple words, in order to acquire the levels according to teacher's expectations, in future, the present level of pupils' knowledge and skills is the entering behaviour. Entering behaviour exists where the instructions start.

iii. Instructional Procedure-This element means those teaching activities which are used for the presentation of the contents. Instructional process is known as the practical aspect of teaching. In this aspect, various methods, techniques, strategies etc., are used. In short, this element or step includes those activities which are used to present the contents.

iv. Performance assessment- This step means those tests on the basis of which a teacher takes decisions. He decides the limits up to which a pupil has acquired the efficiency in the contents. In this step, performance may be measured by any method, by it should be valid, reliable, objective and efficient. Hence, the tests which are used in this step should be objective and efficient.

II. AN INTERACTION MODEL OF TEACHING (N.A. FLANDER)

The systematic observation is a set of procedures. It uses a system of categories to encode and quantifies classroom behavior of teacher and students. The systematic observation represents a useful means of identifying, studying, classifying and measuring specific variables as they interact within instructional learning situation. The purpose of developing the observational system is that a teacher can be trained to use them for analyzing classroom behavior and for planning and studying

his own teaching activities. Since 1960, the efforts have been made in this direction to develop the systems of observation. The works of with all (1949), Flanders and Amidon (1960), Medley and Mitzel (1948) and Galloway (1968) have developed system of observation for studying the classroom teaching activities.

Interaction Analysis:

Interaction analysis is a process of encoding and decoding the study pattern of teaching and learning. In the coding process, categories of classifying statements are established, a code symbol is assigned to each category and a trained observer records by jotting down code symbols. In the decoding step, a trained analyst interprets the display of coded data and reconstructs the original events on the basis of the encoded data even though teacher may not have been present when the data were collected. Although there are many systems for coding spontaneous verbal communication in classroom, a typical system for interaction analysis will usually include,

1. A set of categories, each defined clearly,
2. A procedure for observation and a set of ground rules which govern the coding process,

3. Steps for tabulating data in order to arrange a display and suggestions which can be followed in some of the more common applications.

Dimension of Interaction:

According to Daniel G. Bobrow, the three dimension of interaction are;

1. Communication
2. Coordination
3. Integration

1. Communication:

The first dimension of interaction is communication. For communication to exist between two agents there must be some common ground of mutual understanding. Where does this come from and how does it develop? What techniques are used by people and systems to build and extend this base for communication?

Communication between a particular pair of agents might not always be easy or even possible. In such cases, communication can be facilitated by interposing a mediating agent.

2. Coordination:

The second dimension of interaction is coordination. With multiple agents with multiple active goals, progress requires agent to share resources and work towards some common goals. Various organizational structures, for example, based on market and business hierarchies have been used in the resource allocation process.

But resources are not the only thing that must be shared. For independent agents to work together, they must be able to predict other's behavior, but not necessarily in great detail. Joint commitments to future action are a useful way of organizing this information.

3. Integration

The third dimension of interaction is integration.

Meaning of classroom interaction analysis:

Classroom interaction analysis refers to a technique consisting of objective and systematic observation of the classroom events for the study of the teacher's classroom behavior and the process of interaction going inside the classroom.

Thakur's view:

According to Dr.S.K. Thakur, classroom interaction analysis may be defined as an instrument which is designed to record categories of verbal interaction during, or from, recorded teaching

learning sessions. It is a technique for capturing qualitative and quantitative dimensions of teacher's verbal behavior in the classroom."

Ruhela's view:

Dr. Satya Pal Ruhela, in his book 'Educational Technology' writes that class interaction analysis may be conveniently divided into two parts:

1. Verbal interaction.
2. Non-Verbal interaction.

Flanders' Interaction Analysis System:

Flanders' system is an observational tool used to classify the verbal behavior of teachers, and pupils as they interact in the classroom. Flanders' instrument was designed for observing only the verbal communication in the classroom and non-verbal gestures are not taken into account.

Basic theoretical assumptions of Interaction Analysis:

The various theoretical assumptions, which are basic to very idea of interaction analysis, are as follows:

1. In a normal classroom situation, it is verbal communication, which is predominant. (Flanders1965)
2. Even though the use of spoken language might be resort to non-verbal gestures in classroom, verbal behavior can be observed with higher reliability than most non-verbal behavior and also it can reasonably serve as an adequate sample of the total behavior in classroom.
3. Normally assume that verbal statements of a teacher are consistent with his non-verbal gestures and, in fact, his total behavior. This assumption was sustained in terms of experience in Minnesota Studies (Flanders, 1966).
4. The teacher exerts a great deal of influence on the pupils. Pupil's behavior is affected to great extent by this type of teacher behavior exhibited (Anderson and others, 1946).
5. The relation between students and teacher is a crucial factor in the teaching process and must be considered an important aspect of methodology (Haggerty, 1932).
6. It has been established that social climate is related to productivity and to the quality of interpersonal relations. It has been proved that democratic atmosphere tends to keep work of a relatively high level even in the absence of the teacher. (Lewin and other, 1939)
7. Children tend to be conscious of a warm acceptance the teacher and to express greatest fondness for the democratic teacher. (H.V. Perkins, 1950)
8. The role of classroom climate is crucial for the learning process. (Perkins 1956)

9. The teacher-classroom verbal behavior can be observed objectively by the use of observational technique designed to 'catch' the natural modes of behavior, which will also permit the process of measurement with a minimum disturbance of normal activities of the group of individuals. (Wrightstone J. Wayne, 1958)

10. Modification of teacher classroom behavior through feedback is possible (Flanders 1963), though how much can change occur and more knowledge relating to the permanence of these changes will require further research. (Flanders, 1963,1966)

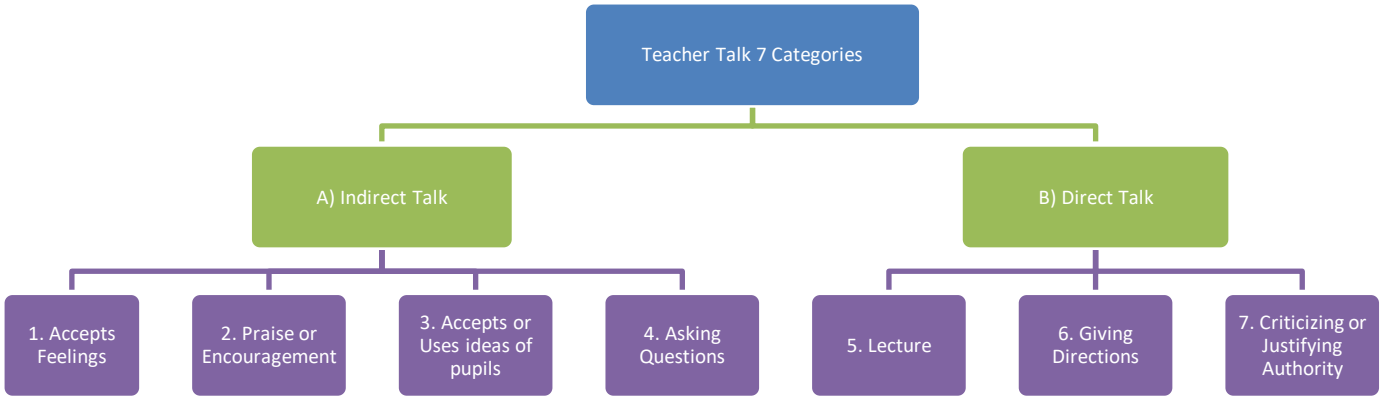
11. Teacher influence is expressed primarily through verbal statements. Non-verbal acts of influence do occur, but are not recorded through interaction analysis. The reasonableness of this assumption rests upon the assertion that the quality of the non-verbal acts is similar to the verbal acts; to assess verbal influence, therefore it is adequately a simple of all influences.

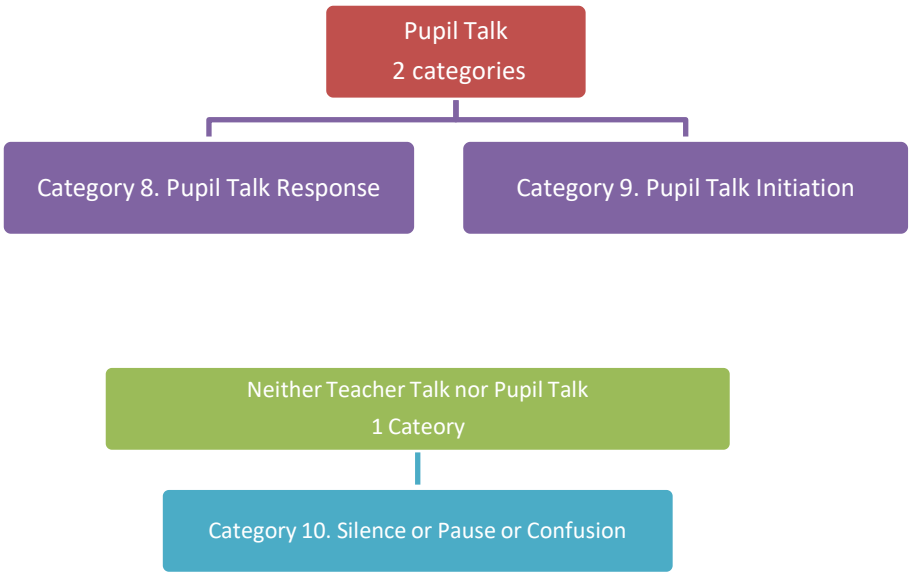
These assumptions focus our attention on the verbal participation of teachers and students in teaching-process.

Flander's Ten Category System:

The Flander's System attempts to categories all the verbal behavior to be found in the classroom. It has two main categories: teacher talk and pupil talk. A third category covers other verbal behavior, i.e., silence or confusion.

FIACS FLOW CHART





Procedure of Flanders's Interaction Analysis:

Encoding and decoding are the two processes of interaction anaylsis. The encoding process is used for recording classroom events and preparing observation matrix by encoding the numbers of ten category system. The decoding is process of interpreting observation matrix.

a) Encoding Process:

The first step in the process of encoding is to memorize the code numbers, in relation to key phrase of words, which are indicated in capital in ten-category system. An observer sits on the last bench of the classroom and observes the teacher when the teacher is teaching. At an interval of every three seconds he writes down that category number which best represents or communication event just completed. For instance, when teacher is lecturing the observer puts 5; when he asks question he puts 4; when student replies he put 8; when teacher praises he puts 2; when teacher asks to sit down he puts 6; when again the teacher starts lecturing he puts 5. The procedure of recording events goes on at the rate of 20 to 25 observations in per minute.

Ground rules for encoding observation:

Because of the complexity of the problems involved in categorization, several ground rules have been established. The rules of observation add in developing consistency in trying to categorize teacher classroom behavior.

Rule 1: When it is not certain in which of two or more categories a statement belongs, choose the category that is numerically farthest from the category 5. For e.g., if an observer is not sure whether it is 2 or 3 then choose 2. If in doubt between 5 and 7, he chooses 5.

Rule 2: If the primary tone of the teacher's behavior has been consistently direct or consistently indirect, do not shift into an opposite classification unless a clear indication of shift is given by the teacher. This rule is often called the rule of the biased, unbiased observer.

Rule 3: An observer must not concern with his own biases or with the teacher's intent. If a teacher attempts to be clever, pupils see his statements as criticism of pupils; the observer uses category 7, rather than category 2. This rule has particular value when applied to the problem of helping teachers to gain insight by their own behavior, e.g., 'I was trying to praise them', and 'I wanted them to answer that question'.

Rule 4: If more than one category occurs during the three seconds interval, then all categories used in that interval are recorded. If no change occurs within three seconds, then repeat category number.

b) Decoding process: After encoding the classroom events into ten-category system 10x10 matrix table is prepared for decoding the classroom verbal behavior. The generalized sequence of the pupil-teacher interaction can be estimated in this matrix table. It indicates, what form a pair of categories. The first number in the pair indicates the row and the second number shows the column for example (10-6) pair would be shown by a tally in the cell formed by row 10 and column 6. For example, the observer has written down the code numbers beginning with 6 as follows: 6,10,5,1,4,8,8,2,3,6,4,8,9,7.5,10.

Tabulating a matrix:

To tabulate these observations in a 10 into 10 matrixes, the first step is to make sure that the entire series begins and ends with the same number. The convention is to add 10 to the beginning and end of the series, unless 10 are already present. So our earlier series now become 10,6,10,5,1,4,8,8,2,3,6,4,8,9,7,10. The observations are now entered in a 10x10 matrix so that the sum of column one equals the sum of row one, the sum of column 2 equals the sum of row 2, etc. The numbers are tallied in the matrix one pair at a time. The first pair in this case is 10-6; the tally is placed in row 10, column 6 cell. The second pair is 6-10, tally this in row 6, column 10

and so on. 'N' always will be tabulated by N-1 tallies in the matrix. In this case, started a series of sixteen numbers and the series produce 15 tallies in the matrix.

	1	2	3	4	5	6	7	8	9	10	Total
1				1							1
2			1								1
3						1					1
4								11			2
5	1										2
6				1						1	2
7					1						1
8		1						1	1		3
9											1
10					1						1
Total	1	1	1	2	2	1	1	3	1	2	15

Interpreting the matrix:

No classroom interaction can be ever recreated. It is part of a moment in history. The purpose of interaction analysis is to preserve selected aspects of interaction through observation, encoding, tabulating and then decoding.

1. The proportion of teacher talk, pupil talk, and silence or confusion:

The proportion of tallies in columns 1,2,3,4,5,6 and 7, columns 8,9 and column 10 to the total tallies indicates how much the teacher talks, the student talks and the time spent in silence or confusion. After several years of observing, anticipate an average of 68 percent teacher talk, 20 percent of pupil talk and 11 or 12 percent silence or confusion.

2. **The ratio between indirect influence and direct influence**:

The sum of column 1,2,3,4, divided by the sum of columns 5, 6, 7 gives this ratio. If the ratio is 1 or more than 1, the teacher is said to be indirect in his behavior. This ratio, therefore, shows whether a teacher is more direct or indirect in his teaching.

3. The ratio between positive reinforcement and negative reinforcement:

The sum of column 1, 2, 3 is to be divided by the sum of the columns 6, 7. If the ratio is more than 1 then the teacher is said to be good.

4. Student's participation ratio:

The sum of columns 8 and 9 is to be divided by total sum. The answer will reveal how much the students have participated in the teaching-learning process.

5. Steady state cells:

	1	2	3	4	5	6	7	8	9	10	Total
1	1.1										
2		2.2									
3			3.3								
4				4.4							
5					5.5						
6						6.6					
7							7.7				
8								8.8			
9									9.9		
10										10.10	
Total											

The above figure shows the 'steady state' cells along the diagonal from the upper left to the lower right. If these cells are heavily loaded it shows that the teacher remains in a particular category for more than three seconds. The cell with the highest frequency of the entire matrix is typically the 5-5 cell which lies on this diagonal indicating that the teacher frequently stays longer than 3 seconds when teacher provides information through lecture.

6. **Content cross cell:**

The cell corresponding to the numbers 4 and 5 in the column and the row are known as 'content cross' cells. If these cells are overloaded they reflect the teacher's emphasis on the subject matter.

7. Constructive integration cells and vicious cells:

Two areas that are most sensitive to the positive and negative aspects of social skill is the teacher-student relationship.

Area A might be called "Constructive Integrative Cells" while area B is called the "Vicious Cells". The cells corresponding to number 1, 2 and 3 are known as constructive integration cells. Cells of numbers 6 and 7 are known as vicious cells. These cells reveal the teacher's attention to problems of classroom management and control as distinct from concern with the subject-matter.

	1	2	3	4	5	6	7	8	9	10	Total
1											
2		A									
3											
4											
5											
6											
7							B				
8											
9											
10											
Total											

Advantages of FIAC

1. The analysis of matrix is so dependable that even a person not present when observations were made could make accurate inferences about the verbal communication and get a mental picture of the classroom interaction
2. Different matrices can be made and used to compare the behavior of teachers at different age levels, sex, subject-matter etc.
3. This analysis would serve as a vital feedback to the teacher or teacher trainee about his/her intentions and actual behavior in the classroom. The supervising or inspecting staff can also easily follow this system.
4. It is an effective tool to measure the social-emotional climate in the classroom.

Disadvantages of FIAC

1. The system does not describe the totality of the classroom activity. Some behaviour is always overlooked and who is to say that the unrecorded aspects of the teaching act are more important than those recorded.
2. Efforts to describe teaching are often interpreted as evaluation of the teaching act and of the teacher. While descriptions may be used as a basis of evaluation, judgment can be made only after additional value assumptions are identified and applied to data

3. The system of interaction analysis is content-free. It is concerned primarily, with social skills of classroom management as expressed through verbal communication.
4. It is costly and cumbersome and requires some form of automation in collecting and analyzing the raw data. It is not a finished research tool.
5. Much of the inferential power of this system of interaction analysis comes from tabulating the data as sequence of pairs in a 10 x 10 matrix. This is a time consuming process.
6. Once the high cost of tedious tabulation (electric computers) is under control but the problem of training reliable observers and maintaining their reliability will still remain.
7. Its potential as a research tool for a wide application to problems is to be explored.

iii. -Computer Based Teaching Model (Daniel Davis)

The teaching model was developed by Lowrence Stuloro and Daniel Davis in 1965. It is the most complicated model having, entering behaviour, determination of objectives and teaching aspect as fundamental elements. In this element computer teaching plan is selected according to the entering behaviour and instructional objectives. The performances of the student are evaluated. Accordingly, alternative teaching plan is presented. In this model, the diagnosis and teaching go side by side. Remedial teaching is provided on the basis of diagnosis. Individual differences are also given importance.

MODERN TEACHING MODELS (JOYCE AND WEIL)

Eggen, Kauchar and Harder (1979) have discussed six Information Processing Models –

1. General Inductive Model,
2. Concept Attainment Model,
3. Taba Model,
4. General Deductive Model,
5. Ausubel's Model and
6. Such man's Inquiry Model.

Modern teaching models

The most comprehensive review of teaching models is that of Joyce and Weil (1980). Bruce R.Joyce has divided all the teaching models under the title "Modern teaching models". They identified 23 models which are classified into four basic families based on the nature, distinctive characteristics and effects of the models.

These four families are :

1. Information Processing Models
2. Personal Models
3. Social Interaction Models and
4. Behaviour Modification Models.

Within the families, there are specific models which are designed to serve particular purposes.

i. - Information Processing Models

The models of this type are concerned with the intellectual development of the individual and help to develop the method of processing information from the environment. These models focus on intellectual capacity. They are concerned with the ability of the learner to observe, organise data, understand information, form concepts, employ verbal and nonverbal symbols and solve problems. The primary purposes are :

1. The mastery of methods of inquiry
2. The mastery of academic concepts and facts
3. The development of general intellectual skills such as the ability to reason and think more logically

The models which belong to this family are :

a. The Concept Attainment Model
b. Inquiry Training Model
c. The Advance Organiser Model
d. Cognitive Growth Development Model
e. Biological Science Inquiry Model

Brief Review of the Information Processing Source Models

SOURCE	TEACHING MODEL	INNOVATOR	AIMS AND APPLICATION

The Information Processing Source	1-Concept Attainment Model 2-Inductive Model	Bruner, Hilda Taba	To develop inductive reasoning, mental inductive process, and understanding of concepts and principles.
	Inquiry Training Model	Richard Suchman	To develop individual competencies to achieve the social objective.
	Biological Science Inquiry Model	Joseph J. Schwab	To develop understanding of research methodology, to think logically on social problems.
	Advance Organizatio nal Model	David Asubel	To understand concepts and facts and to make the content purposeful and interesting.
	Cognitive Growth Developmen tal Model	Jean Piaget	To develop general intelligence and logic,social and moral development.

II. Personal Models

Personal development models assist the individual in the development of selfhood, they focus on the emotional life an individual, The emphasis of these models is on developing an individual into an integrated, confident and competent personality. They attempt to help students understand themselves and their goals, and to develop the means for educating themselves. Many of the personal models of teaching have been developed by counselors, therapists and other persons interested in stimulating individual's creativity and self expression.

The primary goals are :

- To increase the student's self worth,

- To help students understand themselves more fully.
- To help students recognise their emotions and become more aware of the way emotions effect other aspects of their behaviour,
- To help them develop goals for learning,
- To help students develop plans for increasing their competence,
- To increase the students' creativity and playfulness,
- To increase the students' openness to new experience.

The models which belong to this family are :

a. Non-Directive Teaching Model,

b. Synectics Teaching Model,

c. Awareness Training Model,

d. Classroom Meeting Model.

e. Conceptual System Model

Brief Review of The Personal Source Models

SOURCE	TEACHING MODEL	INNOVATORS	AIMS AND APPLICATION
The Personal Source	Non-Directive Teaching Model,	Carl Rogers	To develop self learning by auto instructions, self research and self understanding
	Synectics Teaching Model,	William Gordon	To develop creative competencies for problem solving.
	Awareness Training Model,	W.S. Fietz	To develop individual competencies and mutual relations.
	Classroom	William Glasser	To develop skills of

	Meeting Model.		self –understanding and capacities of dutifulness.
	Conceptual System Model	David. F. Hunt	To adjust with the environment with flexibility in the personality.

Ill. Social Interaction Models

The models in this family emphasise the relationships of the individual to the society or other persons. The core objective is to help students learn to work together. To identify and solve problems, either academic or social in nature.

The primary goals are :

- To help students work together to identify and solve problems
- To develop skills to human relations, and
- To become aware of personal and social values.

The models which belong to this family are :

a. Group Investigation Model,

b. Role Playing Model,

c. Jurisprudential Inquiry Model,

d. Laboratory Training Model,

e. Social Simulation Model,

f. Social Inquiry Model.

Brief review of The Social Interaction Source Models

SOURCE	TEACHING MODEL	INNOVATOR	AIMS AND APPLICATION

The Social Interaction Source	Group Investigation Model	John Dewey, Herbert	To develop democratic abilities, use of knowledge and skills in life of individual and society.
	Jurisprudential Model	Donald Oliver, James P. Shaver	To solve problems on the basis of information and reasoning power.
	Social Inquiry Model Social Simulation Model, Role Playing Model.	Benjamin Cox, Byron	To develop competencies of problem solving and adjustment
	Laboratory Method Model	Bethal, Maine	To develop group skills individual capacities and adjustment.

IV. Behaviour Modification Model

All the models in this family share a common theoretical base, a body of knowledge which referred to as behaviour theory. The common thrust of these models is the emphasis on changing the visible behaviour of the learner. The models which belong to this family is Operant Conditioning Model.

Brief Review of The Behaviour Modification Source Model:

A number of instructional strategies to realise different instructional goals have been developed recently by different researchers They have transformed existing knowledge in the learning and teaching processes into 'Models of Teaching' which can be used by teachers in the teaching, learning process for realising different instructional objectives. There is a need to incorporate a few 'Models of Teaching' in the curriculum of teacher education programme at the secondary as well as elementary level so that prospective teachers attain a higher degree of 'ability to teach'.

SOURCE	TEACHING MODEL	INNOVATORS	AIMS AND APPLICATION
Behaviour Modification Source	Operant Conditioning Model	B.F.Skinner	To achieve the objectives of lower level of cognitive domain on the basis of individual differences

MERITS OF MODELES IN TEACHING

1. It is a natural way of teaching and learning.
2. It is helpful in developing the power of imagination of the students.
3. It helps in the developments of reasoning power of the students.
4. It helps the students to analyse things systematically.
5. It keeps students actively engaged in the classroom activity.
6. It helps in making the students good observers.
7. It keeps the students busy in the classroom work.

LIMITATIONS

1. It makes high demands on the students as well as teachers.
2. All the students of the class may not be able to participate in the teaching-learning process.
3. Some students, on account of their shyness, fail to derive the requisite advantage of this model.

CONCLUSION

Development of models of teaching is the recent innovation in teaching. An important purpose of discussing models of teaching is to assist the teacher to have a wide range of approaches for creating a proper interactive environment for learning. An intelligent use of these approaches enables the teacher to adopt him to the learning needs of the students.

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