UNIT 10 : FLANDERS' INTERACTION ANALYSIS CATEGORIES SYSTEM

UNIT STRUCTURE

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10.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- define the meaning of Classroom Interaction Analysis Technique;
- describe about Flanders' Interaction Analysis Categories System;
- explain the procedure of Flanders' Interaction Analysis Categories System; and
- highlight the advantages and limitations of the Flanders' Interaction Analysis Categories System.

10.2 INTRODUCTION

Dear learners, if you observe a classroom, then you will see a chain of instructional events going on inside the classroom which are indicative of classroom interaction. These instructional events may be like teacher

giving directions to students, expresses his/her ideas by lecturing, stimulates student participation by asking questions, classifying students ideas by applying them to the solution of the problem, praises and encourages students from time to time, diagnoses the feelings and attitudes expressed by students or inferred from their behavior, criticizes the behavior of students and so on. You will also observe that in response to the teacher's questions, the student also gives answers to the teacher or sometimes they initiate new ideas in the class or do some other activities. Presently, it is widely acknowledged that knowledge about classroom interaction analysis is very helpful to the practicing teacher to modify his/her behavior and make his/her teaching more effective and meaningful. In this Unit, we will describe in brief the nature of classroom interaction and - Flanders' Interaction Analysis Categories System (FIACS) as an important system of classroom interaction. This Unit will help you to develop an understanding and insight into the process of teaching-learning and the system of analyzing classroom interaction.

10.3 MEANING OF CLASSROOM INERACTION ANALYSIS TECHNIQUES

Classroom interaction analysis technique is considered as one of the most important innovations in pedagogical science for studying teaching behavior. This technique of analyzing teaching behavior has been developed with a view to improve classroom teaching. It provides insight into the nature of classroom communication and helps in modifying teachers' behavior. As such, when we try to understand the meaning of classroom interaction analysis we may perceive it as a technique for studying the chain of classroom events in such a fashion that each event can be identified and recorded. So, classroom interaction analysis may be defined as a technique for coding spontaneous verbal communication, arranging the data in a meaningful way and then analysing the results in order to study the pattern of teaching learning. The technique measures the teaching competency of teacher through systematic observations of his/her classroom activities. It

is based on the assumption that objective analysis of a teacher's classroom behaviour can give reliable information about the way the teacher behaves in the classroom. And it helps a teacher bring desirable modification in his/her classroom behavior and improve his/her interaction with students.

A system of interaction analysis essentially consists of the process of encoding and decoding. While encoding helps in recording the classroom events in a meaningful way, decoding is used in arranging the data into a useful display and then analyzing the results in order to study patterns of teacher behaviour and classroom interaction. So, a particular system of interaction analysis includes:

- A set of categories each defined clearly,
- A procedure for observation and a set of ground rules which govern the coding process,
- Steps for tabulating the data in order to arrange a display which aids in describing the original events, and
- Suggestions which can be followed in some more common applications.

The objectives of studying classroom interaction may be described as below:

- Classrooms interaction techniques provide objective data, systematic record on the teaching behavior of the teacher which may be helpful in giving definite instructions and guidance to the teacher for the improvement of his/her teaching;
- Identify the pattern of teacher behavior inside the classroom; and
- To evolve remedial strategies in reconstructing the whole concept of teaching methodology.



CHECK YOUR PROGRESS

Q 1: Define the term 'interaction analyses.

.....

10.4 FLANDERS' INTERACTION ANALYSIS CATEGORIES SYSTEM (FIACS)

A good number of interaction analysis techniques have been formulated by systematic research efforts and presently there are more than hundred techniques available for analysis of teacher behavior through classroom observation. Among these techniques, Flanders' Interaction Analysis Categories System (FIACS) is considered as one of the most popular systems. This system was developed by Ned. A. Flanders in the year 1959, at the University of Minnesota, in the form of a teacher training technique. According to Flanders, the purposes of interaction analysis are to help the teacher to develop and control his/her teaching behavior and to investigate the classroom interaction and the patterns of teaching events. It involves categorization of all sets of possible verbal behaviors of a teacher in the classroom while interacting with his/her students.

Flanders' Interaction Analysis Categories

The Flanders Interaction Category System (FICS) consists of ten categories of verbal behavior, seven of which are used when the teacher is talking, two are used when any pupil is talking and the last category indicates silence or confusion. The ten categories are grouped into three major sections which include the three possible conditions of communication in the classroom, viz., (i) Teacher talk, (ii) Pupil talk and (iii) Silence or confusion.

- **Teacher Talk:** The teacher talk comprises two types of behaviour, responsive (indirect influence) and initiative (direct influence). The first four categories belong to indirect influence and the latter three to direct influence.
  - The category of indirect influence covers those verbal behaviors of the teacher which gives the students greater opportunities to respond or maximize their freedom of action.
  - On the other hand, the category of direct influence exhibits those verbal behaviors of the teacher which tend to restrict or minimize the students' freedom of action.

- **Pupil Talk:** Similarly, pupil talk comprises two types of behavior, responsive or initiative. It includes two categories.
- **Silence or Confusion:** It includes all those behaviors that are not covered in the first and second sections. It includes one category

These sections and their ten categories with underlying components behaviors' descriptions are presented in Table 10.1.

TABLE 10.1: Flanders' interaction analysis categories

Sections	Flander's Interaction Analysis Categories (FIAC)
Teacher Talk	
A.	**Indirect Talk**
1.	**Accepts Feelings**
	• In this category, the teacher accepts the feelings of the students. • S/he feels that the students should not be punished for exhibiting his feelings. • Feelings may be positive or negative, predicting or recalling.
2.	**Praise or Encouragement**
	• Teacher praises or encourages student action or behavior. For example, jokes that release tension, but not at the expense of another individual, nodding head, etc. Praise and encouragement are the statements which carry the value judgment of approval • When a student gives an answer to the question asked by the teacher, the teacher gives positive reinforcement by saying words like 'good', 'very good', 'better', 'correct', 'excellent', 'carry on', etc.
3.	**Accepts or Uses ideas of Students**
	• It is just like the first category. But in this category, the students' ideas are accepted only and not his feelings. • If a student passes on some ideas or suggestions, then the teacher may respond to the ideas of students by acknowledging his/her ideas, modifying, or rephrasing ideas, applying, comparing or summarizing student's talk • The teacher can say, 'I understand what you mean' etc. Or the teacher clarifies, builds or develops ideas or suggestions given by a student.

4.	**Asking Questions**
	• Asking questions about content or procedures, based on the teacher's ideas and expecting an answer from the students. Questions may be open or closed, convergent/divergent. • Sometimes, the teacher asks the question but s/he carries on his/her lecture without receiving any answer. Such questions are not included in this category.
B.	**Direct talk**
5.	**Lecturing /Lecture**
	• Giving facts or opinions about content or procedure expression of his own ideas, giving his own explanation, citing an authority other than students, or asking rhetorical questions • This category has the highest frequency during a classroom interaction.
6.	**Giving Directions**
	• The teacher gives directions, commands or orders or initiation with which a student is expected to comply with: open your books or stand up on the benches or solve 5th sum of exercise 4.4 etc. • Such statements enhance teacher's authority and excessive use of this category leads to high dependence on the teacher.
7.	**Criticizing or Justifying Authority**
	• When the teacher asks the students not to interrupt with foolish questions, then this behavior is included in this category. • Teachers asking 'what' and 'why' to the students also come under this category. • Statements intended to change student behavior from unexpected to acceptable patterns, e.g., bawling someone out, stating why the teacher is doing what he is doing, extreme self-reference.
Student Talk	
8.	**Student Talk Response**
	• It includes the students talk in response to teacher's talk • Teacher asks a question, student gives an answer to the question. • Teacher initiates the contact or solicits pupil statements or structures the situation. Freedom to express own ideas is limited.

9.	**Student Talk Initiation**
	• Talk by students that they initiate. • Expressing own ideas; initiating a new topic; freedom to develop opinions and a line of thought like asking thoughtful questions; going beyond the existing structure.
10.	**Silence or Pause or Confusion**
	• Pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.

10.5 ASSUMPTIONS OF FIACS

- The normal classroom situation is usually predominant by verbal communication. So, this system is basically based on observing and analyzing verbal classroom interaction in a normal classroom situation.
- Verbal behaviors can be observed and recorded with higher reliability than most nonverbal behaviors.
- Verbal statements of a teacher are usually consistent with his/her nonverbal gestures and his total behavior.
- Teachers can establish a good classroom climate through the quality of teacher's verbal behavior.
- It is possible to modify teacher behavior through feedback.
- It is possible to ensure objectivity in the process of encoding classroom verbal behavior which in turn permits a system of measurement without disturbing other classroom events.



CHECK YOUR PROGRESS

Q 2: Describe Flanders' Interaction Analysis Categories.

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Q 3: What is meant by silence or confusion in FIACS?

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Q 4: Write any three assumptions of FIACS.

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10.6 PROCESS OF FLANDERS INTERACTION ANALYSIS

The Flanders 10-category interaction analysis system involves three stages:

Stage 1: Encoding Process (observation or recording of classroom events)

Stage 2: Decoding Process (construction of interaction matrix)

Stage 3: Interpretation of a 10x10 matrix

Now, let us discuss each stage in details:

10.6.1 Stage 1: Encoding Process

Encoding means observation or recording of the chain of events going on inside the classroom. This is performed by a trained observer. The requirements of this stage are as follows:

- The observer should require to train himself/herself for the proper recording and s/he must memorize code numbers in relation to a key phrase or word indicated against each category, e.g. 4 is for asking questions.
- The observer should meet the teacher personally whose classroom interaction has to be observed and an arrangement for the observations is arranged as per the needs and conveniences of the teacher.
- Proforma on which observations are made is a 20x20 form in which a 20 minutes episode can be recorded. This form has space for 400 code symbols and it provides space for making comments/notes.
- **Procedure of encoding:** The observer is required to sit in such a place in the classroom from where s/he can hear and see both the teacher and students without disturbing or interfering with the normal classroom activities. S/he notes down within every three seconds the code or category number which best

represents the interaction event just observed on a data sheet. Thus, the observer notes down about 20 observations in a minute on the data sheet. During the recording, the observer records the categories of the behaviours according to their numbers from top to bottom into the columns. Here, speed in recording is important. One lesson is observed for about 20 minutes and so, 400 frequencies (approximately) can be recorded. On the data sheet are recorded the full particulars of the teacher, i.e., name, qualifications, etc.

Certain ground rules: The task of encoding the classroom interaction is quite difficult a task to be performed which requires proper training, practice and care from the part of the observer. The objectivity and reliability of the observation is very critical to get the actual picture of the classroom interaction. For that, certain ground rules have to be followed for encoding which are mentioned as below:

Rule 1: When not certain to which two or more categories a statement belongs, choose the category which is numerically away from Category-5; e.g. for choosing between 3 and 4 choose 3, and for 8 and 9, choose 9.

Rule 2: If the primary tone of the teacher's behaviour has been consistently in initiative or responsive, do not shift it to the opposite classification unless a clear indication of shift is given by the teacher.

Rule 3: The observer should not be concerned with his/her biases or teacher's intent. S/he must be free from personal biases.

Rule 4: If more than one category occurs during the 3 seconds duration, then all these categories should be recorded. Each change in the category is also recorded. If no change occurs within 3 seconds duration that category number is repeated.

Rule 5: If a silence is longer than 3 seconds, record 10 for every 3 seconds.

Rule 6: When the teacher calls a child by his name, the observer ordinarily records 4.

Rule 7: When a teacher repeats a student's answer and the answer is correct, this is recorded as 2.

Rule 8: When the teacher repeats a student's idea and communicates that the idea will be considered or accepted as something to be discussed, record it as 3.

Rule 9: If a student begins to talk after another student, a 10 is inserted between 9's and 8's to indicate the change of students.

Rule 10: Reactions such as 'Okay', 'Yes' and 'All right' etc. are recorded as 2.

Rule 11: A teacher's joke which is not made at the expense of children is 2, but the joke makes fun of a child then it is recorded as 7.

Rule 12: Rhetorical questions are recorded as 5.

Rule 13: If the student gives a specific predictable answer to a narrow question, this is recorded as 8.

Rule 14: An 8 is recorded when several students respond in unison to a narrow question.

10.6.2 Stage 2: Decoding process

After recording or encoding the classroom events into ten categories, the observations are tabulated and converted on a 10x10 matrix table. This matrix table consists of 10 columns and 10 rows making 100 cells. Each number is entered in the form of sequence pairs, being used twice, firstly as the first number and secondly as the second number. The rows of the matrix represent the first number in the pair and the columns represent the second. Hence, each pair of numbers overlaps with the previous pair and such overlapping pairs of observations are entered in appropriate cells of the matrix.

In the matrix construction, one is to make sure that the entire series begins and ends with the same number. It is customary to add a 10 to the beginning and end of the series if it is not already present. So, the data should begin and end in category 10. If a 10 is

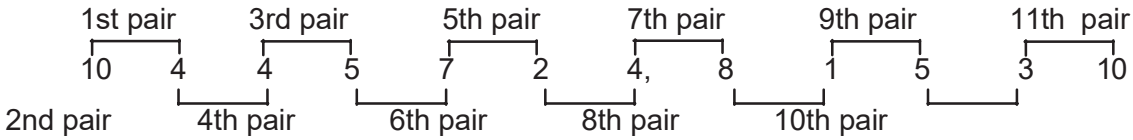
not mentioned in the data, the observer should add it at both ends. Now, let us understand the process of matrix construction with the following example:

Suppose that in an interaction analysis the observer has encoded or recorded the category numbers as 4, 4, 5, 7, 2, 4, 8, 1, 5, 3.

Let us put 10 before and after the series as;

10, 4, 4, 5, 7, 2, 4, 8, 1, 5, 3, 10.

Next, try to form pairs as:



After pairing, these are entered into the 10x10 matrix. The first sequence pair (10,

5) has been tallied in the cell located at the interaction of 10th row and 4th column. The next (4, 4) is tallied in the cell located at the intersection of 4th row and 4th column, and so on. The matrix is completed as shown in Table 10.2.

Table 10.2: Interaction matrix table

CATEGORY	1	2	3	4	5	6	7	8	9	10	Total
1					/						1
2				/							1
3										/	1
4				/	/			/			3
5			/				/				2
6											–
7		/									1
8	/										1
9											–
10				/							1
Total	1	1	1	3	2	–	1	1	–	1	11

In the matrix table, it should keep in mind that the total number of observations N will always be tabulated by N-1. In the above table, there are 12 category numbers (including the extra 10), which have produced a total of 11 tallies in the matrix.



CHECK YOUR PROGRESS

Q 5: What is meant by the encoding process in FIACS?

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Q 6: Why are ground rules necessary for encoding in FIACS?

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10.6.3 Stage 3: Interpretation of a 10x10 matrix

The process of interpretation of interaction or observation data is often called decoding. Decoding the matrix table helps us in knowing what was going on inside the classroom in terms of teacher behavior and classroom interaction for communication. We can broadly see it in two broad aspects: (i) quantitative, and (ii) qualitative (Mangal, S.K. & Mangal, U. (2010). Essentials of Educational Technology. PHI Learning Pvt. Ltd., New Delhi. pp.373-379). The details of these two broad aspects are discussed below:

- **Quantitative Analysis of Teacher Behavior:** This analysis may be based on the following aspects:
  - Interaction categories
  - Area of interaction
  - Behavior Ratios
  - Interaction Variables

Let us discuss here only the first three aspects to understand how the matrix table of classroom interaction analysis is interpreted.

- **Interaction categories:** The observed data may be interpreted

in the simplest way. Here the total of the column representing the use of various categories are taken for the interpretation. These are converted in percentages, which help in ascertaining the relative importance given to the use of various categories by a teacher. For example, if we take the matrix table 10.2 for interpretation then, by applying this method, we would be getting the percentage of categories given in Table 10.3.

Table 10.3: Percentage of categories for interpretation

Columns	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total
Percentage	9.09	9.09	9.09	27.27	18.18	0	9.09	9.09	0	9.09	99.99

- **Area of interaction:** Flanders (1969) divided the tabulated matrix into 10 areas (Flanders, 1963), namely A, B, C, D, E, F, G, H, I and J for interpretation as shown in the Table 10.4:

Table 10.4: Area of Interaction in the Matrix Table

Area	Description	Categories Covered
Area A	It indicates the indirect influence of teacher talk.	It is calculated by combining the percentage of teacher statements falling into the categories 1, 2, 3 and 4.
Area B	It stands for direct influence of teacher talk.	It is calculated by combining the percentage of the categories 5, 6 and 7.
Area C	This area represents pupil talk.	It is computed by adding the percentage of categories 8 and 9.
Area D	It involves the silence or confusion category.	It is the percentage of category 10 in relation to total tallies.
Area E	It gives an index of teacher's dealing with students on an effective plane.	It represents a block of nine cells involving 1, 2, and 3 categories. It may be defined as the percentages of tallies in nine cells (1, 1), (1, 2), (1, 3), (2, 1), (2, 2), (2, 3), (3, 1) (3, 2), and (3, 3) with respect to the total tallies.

Area F	This area is sensitive to difficulties that teachers may face with regard to direction and criticism in dealing with students.	It represents a block of four cells involving categories 6 and 7. Operationally, it is defined as the percentages of tallies in four cells (6, 6). (6, 7), (7, 6), and (7, 7) with respect to total tallies.
Area G	It indicates the teacher's responding to the termination of pupil talk with indirect influence.	It represents a block of six cells (8, 1), (8, 2), (8, 3), (9, 1), (9, 2) and (9, 3). Operationally, it is the percentage of the total of these six cells.
Area H	It indicates the teacher's responding to the termination of pupil talk with direct influence.	It represents a block of (8, 6), (8, 7), (9, 6) and (9, 7) cells. Operationally, it is the percentage of the total of these four cells.
Area I	It indicates the type of statements that trigger student participation. The students often respond to questions posed by the teacher and hence there is usually high tally loading in cells (4, 8), (4, 9), (5, 8), and (5, 9) and indicate the type of statements that trigger student participation. The students often respond to questions posed by the teacher and hence there is usually high tally loading in cells (4, 8) and (4, 9). A high loading on (5, 8) and (5, 9) indicates classroom drill directed by the teacher.	It represents a block of four cells (4, 8), (4, 9), (5, 8) and (5, 9).
Area J	It represents the sustained pupil initiation or response of one followed by the other.	It involves four cells (8, 8), (8, 9), (9, 8) and (9, 9).

- **Behaviour ratios:** The calculation of behaviour ratios may be done directly from the formulae constructed for this purpose. In this method, all column totals are converted into percentages of the matrix total and then calculate certain interaction or behaviour ratios. There are fifteen bahaviour ratios which are stated below

one by one:

- **Teacher talk ratio (TT):** It may be defined as actions taken by the teacher that reflect the tendency of teacher talk. This teacher-talk (TT) is calculated by adding the frequencies 1 to 7 categories multiplying by 100 and dividing by the total tallies (N) of the matrix.

  TT= (1+2+3+4+5+6+7)/N x 100

- **Indirect teacher talk ratio (ITT):** It indicates the actions taken by the teacher which encourage and support pupil participation. Indirect teacher talk can be operationally defined by noting down the percentages of teacher statements falling into categories 1, 2, 3 and 4. It is calculated by adding the tallies 1, 2, 3 and 4 categories multiplying by 100 and divided by total number of matrix tallies (N) which can be presented as:

  ITT= (1+2+3+4)/N x 100

- **Direct teacher talk ratio (DTT):** It refers to action taken by the teacher which restricts students' participation. Expressing one's own views, through lectures, giving directions, and criticism with the expectation of compliance to restrict pupil-participation may be indicative of direct teacher's influence. Direct influence may be operationally defined by counting the percentage of teacher statements falling into 5, 6 and 7 categories. It is calculated by the following formula:

  DTT= (5+6+7)/N x 100

- **Pupil talk ratio (PT):** Pupil talk is defined as verbal activities of the pupils in response to the teacher. A pupil who asks to approve his/her work in order to make sure that it is satisfactory before going to the next step. Pupil-response can be operationally defined by noting down the percentage of student-talk falling into categories 8 and 9. It can be calculated by the formula: PT= (8+9)/N x 100

  In this formula, (8+9) stands for the addition of the frequencies of the 8 and 9 categories.

- **Silence or confusion ratio (SC):** The silence or confusion is defined as any event not included in other categories. Periods of confusion in communication which is not understood by an observer or when it is difficult to determine who is talking is classified in this category. The silence or confusion can be operationally defined by noting down the tallies of category 10. The formula is as below:

  $$SC = (10)/N \times 100$$

- **Indirect to direct ratio (I/D):** It involves the proportion of indirect influence behaviour pattern of the teacher. It can be defined operationally by noting down the proportion of indirect influence and direct influence of teachers. It can be computed by adding tallies 1, 2, 3 and 4 of categories and multiplied by 100 and divided by the total tallies of 5, 6 and 7 categories. The formula is,

  $$I/D = (1+2+3+4)/(5+6+7) \times 100$$

- **Pupil initiation ratio (PIR):** It proposed to indicate what proportion of pupil talk is judged by the observer to the percentage of category 9. It can be calculated by multiplying the tallies of category 9 and 100 and dividing by the sum of all pupil talk or total tallies of categories 8 and 9. It is calculated by the formula:

  $$PIR = (9)/(8+9) \times 100$$

- **Teacher response ratio (TRR):** It may be defined as an index presenting the tendency of a teacher to react to the ideas and feelings of the pupils. The TRR can be obtained by adding the frequencies of categories 1, 2 and 3, multiplying by 100 and dividing by the sum of categories 1+2+3+6+7. It is calculated by the formula:

  $$TRR = (1+2+3)/ (1+2+3+6+7) \times 100$$

- **Teacher question ratio (TQR):** It shows the tendency of a teacher to use questions when guiding the more content-oriented part of the class discussion. The TQR is the percentage of all the statements related to category 4 and 5 which are classified in category 4. The TQR varies from teacher, solicits pupil reaction

for ideas which the teacher considers important or as s/he checks their understanding by asking questions. The formula is,

TQR = (4)/(4+5) x 100

- **Content cross ratio (CCR):** It is an indication that the main focus of the class discussion becomes on the subject matter, that the teacher takes a very active role in the discussion and that attention to motivation and discipline is minimal. The CCR is found by calculating the percentage of all tallies that lie within the columns or rows of categories 4 and 5. It can be computed by the following formula:

CCR= (4) +5/N x 100

- **Steady state ratio (SSR):** It reflects the tendency of teacher and pupil talk to remain in the same category for a period longer than three seconds. The higher the ratio, the less rapid is the interchange between the teacher and pupil on average. Operationally, it is the percentage of the frequencies in steady state cells (SSC) [(1, 1), (2, 2), (3, 3), (4, 4), (5, 5), (6, 6), (7, 7), (8, 8), (9, 9) and (10, 10)]. The formula is,

SSR= Total Frequencies Steady State Cells/N x 100

- **Pupil steady ratio (PSSR):** It indicated the tendency of pupil talk to remain in the sense that for a period longer than three seconds. It is the percentage of the (8, 8) and (9, 9) out of categories 8 and 9. The formula is,

PSSR= (8, 8) + (9, 9)/ (8, 9) x 100

- Instantaneous teacher response ratio (ITRR-89): It is an index of the teacher's tendency to praise or integrate pupil ideas and feelings into the class discussion when the pupil stops talking. The formula is,

ITRR-89= (8, 1) + (8, 2) + (8, 3)+ (9, 1)+ (9, 2) + (9, 3)/

= (8, 1) + (8, 2) + (8, 3) + 8, 6) + (8, 7) + (9, 1) + (9, 2)

+ (9,3) + (9, 6) + (9, 7) x 100

Where (8, 1), (8, 2), etc. stand for the tallies or frequencies of these cells.

- **Instantaneous teacher question ratio (ITQR-89):** It may be defined as the tendency of the teacher to respond to pupil talk with questions based upon his/her own ideas, compared to his/her tendency to lecture. It can be computed by the formula:

ITQR-89= (8, 4) + (9, 4)/ (8, 4 + 8, 5) + (9, 4 + 9, 5) x 100

- **Vicious circle ratio (VC):** It indicates the teacher's restrictive behaviour involving directions and self-justification, which is sensitive to difficulties faced by the teacher when the students are not complying satisfactorily. The formula is,

VC = (6, 6) + (6, 7) + (7, 6) + (7, 7) /N x 100

- **Interpretation:** The index of behaviour ratios discussed above need to be interpreted against the norms, i.e. the standard normative expectation. Flanders tried to develop such norms for various grades in the U.S.A. These have also been developed to suit the Indian conditions. To get a clear picture on it, we are reproducing these norms in Table 10. 4 for class VIII.

Table 10.4**: Behavior ratio norms**

S. No.	Behavior ratio	Symbol	Developed by Flanders	Developed in Indian conditions
1	Teacher Talk	TT	70	67
2	Pupil Talk	PT	19	21
3	Silence/Confusion	SC	11	12
4	Teacher Response Ratio	TRR	35	26
5	Teacher Question Ratio	TQR	20	19
6	Pupil Initiation Ratio	PIR	15	12
7	Steady State Ratio	SSR	52	46
8	Pupil Steady State Ratio	PSSR	26	37
9	Content Cross Ratio	CCR	68	72

10	Instantaneous Teacher Response Ratio	TRR-89	67	48
11	Instantaneous Teacher Question Ratio	TQR-89	39	42

Source: Mangal, S.K. & Mangal, U. (2010). Essential of Educational Technology. PHI Learning Pvt. Ltd., New Delhi. P. 377

On the basis of the above mentioned Behaviour Ratio Norms table, we can identify the effective and ineffective teachers. The teachers exhibiting greater values of behaviour ratios mentioned on serial numbers, 2, 4, 5, 6, 8 and 11 than the norms provided above may be termed as effective teachers while those exhibiting greater values of behaviour ratio, as mentioned on serial numbers 1, 3, 7, 9, and 10 may be termed as ineffective teachers. So, here we may summarize that the teachers who have the greater values of pupil-talk, teacher response ratio, teacher question ratio, indirect teacher influence and pupil steady state ratio than the normative values are considered to be effective teachers. On the contrary, teachers who have higher teacher-talk, silence or confusion, steady state ratio, content cross ratio and direct teacher behaviour than their normative values are stated as ineffective teachers.

- **Qualitative Analysis of Teacher Behaviour:** Under this method, the following methods are employed for the analysis of the teacher behaviour:
- **Clockwise flow diagrams:** A clockwise flow diagram provides a visual display the sequence of activities of the classroom, i.e. "what event followed what event". So, it is very helpful to understand the nature and structure of classroom verbal behaviour. A flow diagram is drawn on the interpretation matrix. It can help to provide feedback to teachers to improve their teaching behaviour. A flow diagram may be drawn from an observation matrix as follows:

- Firstly, locate and encircle the cell with highest frequency in the matrix, as this sequence of the pair is which occurs most often. This encircled cell will be the starting point of presenting the flow of events.
- After locating the starting point, identify the event which is most likely to follow. The highest frequency in the row other than the starting point cell is marked as the second step of the flow point after locating the second point.
- Connect these two marked cells with a little looping arrow.
- By inspecting the column of the second point, the highest frequency of the cell is noted and encircled. It is connected by an arrow with the second step. It is essential that the flow of activities is presented clockwise. \

Flow diagrams are very useful to understand the sequence of events in the classroom very clearly. What events precede and what follows can be identified through flow diagrams. It also helps in locating the transition of events and the state of steadiness. Besides, flow diagrams help in making comparison between two matrices with normative expectation.

- **Box-flow diagrams:** Box-flow diagrams help to understand the intensity with which the events occurred in the class, the flow diagram may be converted into a box flow diagram. As a result of that, all the cells with frequency less than 10 are eliminated. So, the observer is able to look closely at those cells (events) which occurred with high intensity during classroom interaction.



CHECK YOUR PROGRESS

Q 7: What is meant by direct teacher talk ratio (DTT)?

.....

Q 8: What is meant by Clockwise flow diagrams?

.....

10.7 ADVANTAGES AND DISADVANTAGES OF FIACS

- **Advantages of Flanders' Interaction Analysis System:**

- It is a reliable and objective technique to understand classroom interaction analytically.
- As the system's rule is to take observation after every three seconds, it is ensured that the observer records almost all the behaviours of teachers and students.
- It helps to determine the classroom climate. For example, high teacher talk means a classroom dominated by teachers, whereas high student talk is indicative of a lively classroom.
- A teacher can control his teaching behaviour, so this system is well suited to be used as a mechanism of feedback device for the modification of teacher behaviour.
- It is used as an observation technique in pre-service and in-service teacher education programmes.
- It adds and supplements the training techniques such as micro teaching and team teaching.
- The system is employed as a research tool for analysing and studying teaching and teaching behaviour.

- **Limitations of Flanders' Interaction Analysis System:**

- The system does not describe the totality of the classroom activity. There is a probability of over-looking some important behaviour. And sometimes an unrecorded aspect may be more important than the recorded one.
- More emphasis is laid on teacher behaviour as compared to student behaviour.
- Since the categories are too broad, there is always a fear that an element of subjectivity gets introduced. Different people may differ on clarifying verbal statements.
- Major focus of the system is verbal behaviour whereas nonverbal behaviour is also equally important in classroom interaction

- Tabulation of data pairs into a 10x10 matrix is a time consuming process.
- It does not provide value judgement about good and bad teaching behaviours.
- The system is content-free. It is concerned primarily with social skills of classroom management as expressed through verbal communication. The technique provides no information about the quality of content.



10.8 LET US SUM UP

- Classroom interaction analysis is a technique for studying the chain of classroom events in such a fashion that each event can be identified and recorded.
- A particular system of interaction analysis includes: (a) a set of categories each defined clearly, (b) a procedure for observation and a set of ground rules which govern the coding process, (c) steps for tabulating the data in order to arrange a display which aids in describing the original events, and (d) suggestions which can be followed in some more common applications.
- Flanders' Interaction Analysis Categories System (FIACS) is considered as one of the most popular systems of classroom interaction analysis
- The ten categories of FIACS are grouped into three major sections, viz., (i) Teacher talk, (ii) Pupil talk and (iii) Silence or confusion.
- It is possible to modify teacher behaviour through feedback.
- The objectivity and reliability of the observation is very critical to get the actual picture of the classroom interaction.
- Decoding the matrix table helps us in knowing what was going on inside the classroom in terms of teacher behaviour and classroom interaction for communication.
- Teachers who have higher teacher-talk, silence or confusion, steady state ratio, content cross ratio and direct teacher behaviour than

their normative values are stated as ineffective teachers.

- Box-flow diagrams help to understand the intensity with which the events occurred in the class, the flow diagram may be converted into a box flow diagram.
- FIACS can be used as a mechanism of feedback device for the modification of teacher behaviour.



10.9 FURTHER READING

1) Aggarwal, J.C. (2014). Essential of Educational Technology. Vikas Publishing House Pvt. Ltd., New Delhi.
2) Mangal, S.K. & Mangal, U. (2010). Essential of Educational Technology. PHI Learning Pvt. Ltd., New Delhi.
3) Sharma, R.A. (2008). Educational Technology. R. Lall Book Depot, Meerut.



10.10 ANSWER TO CHECK YOUR PROGRESS

Ans to Q No 1: Interaction analysis is defined as a technique for studying the chain of classroom events in such a fashion that each event is taken into consideration. Analysis of teacher behaviour helps the teacher to improve his teaching.

Ans to Q No 2: The Flanders Interaction Category System (FICS) consists of ten categories verbal behaviour, seven of which are used when the teacher is talking, two are used when any pupil is talking and the last category indicates silence or confusion. The ten categories are grouped into three major sections which include the three possible conditions of communication in the classroom, viz., (i) Teacher talk, (ii) Pupil talk and (iii) Silence or confusion.

Ans to Q No 3: Silence or confusion includes all those behaviours that are not covered by teacher talk and pupil talk.

Ans to Q No 4: Three assumptions of FICS are as below:

- Verbal behaviours can be observed and recorded with higher reliability than most nonverbal behaviours.

- Verbal statements of a teacher are usually consistent with his/her nonverbal gestures and his total behaviour.
- Teachers can establish a good classroom climate through the quality of the teacher's verbal bahaviour.

Ans to Q No 5: Encoding means observation or recording of a chain of events going on inside the classroom.

Ans to Q No 6: The objectivity and reliability of the observation in FICS is very critical to get the actual picture of the classroom interaction. For that, certain ground rules have to be followed for the encoding process.

Ans to Q No 7: It refers to action taken by the teacher which restricts students' participation. Expressing one's own views, through lectures, giving directions, and criticism with the expectation of compliance to restrict pupil-participation may be indicative of direct teacher's influence.

Ans to Q No 8: A clockwise flow diagram provides a visual display of the sequence of activities of the classroom, i.e. "what event followed what event".



10.11 POSSIBLE QUESTIONS

Short Questions (Answer each question in around 150 words)

Q 1: What are the objectives of studying classroom interaction?

Q 2: What is meant by Flanders' Interaction Analysis Categories System?

Q 3: What is meant by indirect talk and direct talk?

Q 4: How is the decoding process done in FIACS?

Q 5: Describe the Interaction matrix table.

Long Questions. (Answer each question in around 300-500 words)

Q 1: Describe Flanders' Ten Category System in detail.

Q 2: Discuss the process of quantitative analysis of teacher behaviour in the Flanders' system.

Q 3: Draw out the advantages and limitations of FIACS.

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