APPENDICES

I  AUDIO-SCRIPT OF SIM ON THE FOLLOWING THREE TEACHING SKILLS:

(i) The Skill of Probing Questioning.
(ii) The Skill of Explaining.
(iii) The Skill of Illustrating with Examples.

II  (i) Questionnaire for Student-teachers.
(ii) Socio-Economic Status Scale (Urban)
(iii) The Jim Scale (Adapted).

III  The Baroda General Teaching Competence Scale.

IV  Observation Schedules for the three Skills.

(i) The Skill of Probing Questioning.
(ii) The Skill of Explaining.
(iii) The Skill of Illustrating with Examples.

V  Names and Raw Scores of thirty two student-teachers obtained on Standard Progressive Matrices Sets A, B, C, D and E, Socio-Economic Status Scale, Jim Scale, and Student-Teacher Index.
APPENDIX I

TAPE RECORDING SCRIPT

INDUCTION SESSION

Background Comments

You will now hear a short description of microteaching course on Probing Questioning which has been developed at Dev Samaj College of Education for Women, Ferozepur City.

(Pause)

C: This is a self-instructional microteaching course.

(Pause)

C: Its complete title is skill of Probing Questioning.

(Pause)

C: This microteaching course is an adaptation of the self-instructional material developed by a team engaged in research in microteaching at Centre of Advanced Study in Education, Baroda.

(Pause)
C: This self-instructional course is produced by the efforts of Miss Rajwant Kaur under the guidance of Dr. (Miss) Saroj Srivastava.

(Pause)

C: In order to know about this course, let us first hear something about microteaching from Mrs. Neer Kanwal. Now she will tell you what it is like.

Mrs. Neer Kanwal — Our Teacher

Training programme has been criticised on many grounds and many innovations are tried. Microteaching is one of them. According to this approach, the complex task of teaching is analysed into limited and well-defined teaching skills. In microteaching setting the student requires to teach a single concept using specified teaching skill to a smaller number of students in a short duration. The student proceeds
to the next skill after gaining competency in the previous skill.

Would you please tell us something about self-instructional micro-teaching approach?

Mrs. Neer
Kanwal: In fact there is nothing difficult about the course provided you follow the instructions carefully. The course is divided into three instructional sequences. In each instructional sequence you begin by hearing about the skill you will be practising in that sequence. You may also answer a few questions to evaluate what you have learnt.

(Pause)

Then you hear an instructional lesson which tells you about the skill you will be practising. For example you will practise skill of reinforcement.
To make you familiar with this lesson let us now hear how Miss Tripta uses this skill while teaching a lesson 'the basic needs of a man.'

Miss Tripta:
What are the basic needs of a man?

Neelam:
The basic needs of a man are air, water, food and housing.

Miss Tripta:
Yes, fine. What is the most important need of a man?

Neelam:
Air is the most important need of a man because we can live without water, food or housing for some days, but we cannot live without air even for a minute.
We have just heard an instructional lesson. Let us now hear Mrs. Neer Kanwal speaking more about the course.

Mrs. Neer Kanwal: After you have heard the instructional lesson you hear the model lesson which involves the teaching skill you have been learning about. While listening, you identify the skills used and fill in the check list. You can verify your answers when it is told at the end of the model lesson. Then you can modify your microlesson if you want to do so. Then you take five or seven pupils and go into a class where you can teach your microlesson of five to ten minutes duration. Record the whole lesson on an audio tape.
We have just heard a few store details about the course from Mrs. Neer Kanwal. Now we shall hear another microlesson stressing on the skill of redirection.

Miss Triptai: What are the sources of irrigation?

C: Five pupils raise their hands. The teacher is now looking towards Sunita indicating that she should respond.

Sunita: Rivers are the source of irrigation.

Miss Triptai: Yes, Anyother?

C: The teacher asked the same question to Rama by hand gesture. This is an example of redirection.

Rama: Canals are the other source.

Miss Triptai: Very good, any one else?

C: Teacher points at Hindu to respond.
Bindu- Wells and tube-wells are also used for irrigation.

O: Through this lesson we got an idea about the re-directing technique of probing questioning.

(Pause)

Mrs. Neer Kanwal, could you please tell us what to do further in the course?

Mrs. Neer Kanwal - After you have taught your microlesson, you are given time to replay the tape and listen your own lesson. You have the observation schedules to assess yourself and make a note of what you have achieved. You can see if you have been successful in your questioning technique. After this you revise your microlesson if you feel that some improvement is needed. Then you are ready to reteach your microlesson to a different group of pupils and record the
same. After the reteach, replay the tape and evaluate yourself on the same observation schedules. You can replay it for the second or third time if you desire so.

C: Mrs. Neer Kanwal, could you describe what instructional sequence is?

Mrs. Neer Kanwal: Basically an instructional sequence can be divided into four parts. First, you read about the skills you will be practising in that sequence.

(Pause)

Secondly, you listen to the instructional lesson and model lesson.

Thirdly, you prepare, teach and evaluate your microlesson.

Fourthly, you replan, reteach and evaluate the reteaching of your microlesson.
INSTRUCTIONAL SEQUENCE ONE

Background Comments
You will now hear a short description of microteaching course on probing questioning which has been developed at Dev Samaj College of Education for Women, Farozepur City.

(Pause)

C: This is a self-instructional microteaching course.

(Pause)

C: Its complete title is skill of Probing Questioning.

(Pause)

C: This microteaching course is an adaptation of the self-instructional material developed by a team engaged in research in microteaching at Centre of Advanced Study in Education, Baroda.

(Pause)

C: This self-instructional course is produced by the efforts of Miss Rajwant Kaur under the guidance of Dr. (Miss) Saroj Srivastava.
You have completed the induction session of this course. Now on this tape you will hear the instructional lesson and model lesson of Instructional Sequence One. It tells us about five components involved in the skill of probing questioning. They are prompting, seeking further information, refocusing, redirection and increasing critical awareness.

To probe means going deep into a pupil's response by asking a series of questions. It is to lead the same pupil to a more adequate or complete response. Each probe should move the pupil's initial response towards the direction of more adequate answer you want.

Your aim should always be to get a more complete and thoughtful answer from the pupils.
The five components of probing questioning you will hear are prompting, seeking further information, refocusing, redirection and increasing critical awareness.

Let us first consider the prompting technique. The prompting technique is used when the pupil gives 'I don't know' response, very weak response or partially or completely incorrect response.

The most common prompting procedure is to go back to related questions the pupil can answer and then ask a series of questions which lead the pupil to the criterion (final) response through step by step questioning process.

These questions should also provide clues or hints which permit the pupil to improve on his original response. Prompting is done without assigning a value to his initial response.
Miss Triptai: How are days and nights caused?
Sitai: I don't know, Madam.
Miss Triptai: How do we get day light?
Sitai: The light comes from the sun.
Miss Triptai: Yes, and what is the earth doing as it goes round the sun?
Sitai: It rotates round the sun.

Miss Triptai: Which side of the earth will have day light?
Sitai: The side which faces the sun.

C: Let us hear first prompting sequence. Notice the technique on 'I don't know' pupil responses into a responsive contribution of ideas.

C: You must have noticed that when the pupil could not respond, the teacher prompted her to arrive at satisfactory response leading to final correct response.

C: Here again you notice the teacher prompting the pupil.
Miss Triptai: Can you sum this up and tell us how days and nights are caused?
Sita: The earth rotates on its axis. It is daylight on that side which faces the sun and it is night on the other side because the sun light cannot reach there.
Miss Triptai: Very good, Sita.

C: You must have noticed in the lesson you just heard that the questions put by the teacher gave the hints to the pupil on the kind of information which was relevant.

C: Let us hear another prompting sequence where the teacher deals with partially correct or incomplete answer. You would notice that the teacher reinforces the correct part before modifying the incorrect or incomplete part of the response. Let us hear Miss Sneh teaching History to the pupils.
Miss Snehi:- What were the causes for the rapid spread of Buddhism in India?

Rajinder:- The principles of Buddhism were more flexible and simpler than the principles of the Hindu religion.

Miss Snehi:- Yes, very good. Rigidity and complexity of the Hindu religion were the main causes for the rapid spread of Buddhism in India. There were many other reasons also. Is there any reason related to the language used at that time?

C: Here the teacher first reinforces the pupil for her correct response, then prompts her for developing complete response.

(Pause)

You have just heard a lesson using the prompting technique. It is used to improve weak kind of pupils' responses.
In many cases, however, a pupil gives a fairly good response but there is room for further improvement. In this case you can improve his answer by asking further clarification. It helps the pupil to clarify, elaborate or explain his initial response.

Let us have an example of further clarification technique, the teacher is discussing about the causes of earthquakes.

Miss Snehs: - What are the causes of earthquake? Rajinder?
Rajinder: - The under earth shakes and there is an earth-quake.
Miss Snehs: - Rajinder explain a little more how the earth shakes?
Rajinder: - When the earth lends up, the under earth bolders move and we perceive the tremor.
Miss Snehs: - Very good, Rajinder.
Os You must have noticed that the teacher sought for further information of the response from the pupil. This technique is known as calling for further information.

Os In fact, the teacher's statements such as 'what else can you add,' 'explain what you mean,' 'can you state your response in another way,' are enough when the pupil's response needs clarification or further information. Be clear that the teacher's questions calling for further information contain no clues or no new information. In this instance you are not adding any additional information, but you are requesting the pupil to do so. This is the major difference between prompting and seeking further information. Let us hear another instructional lesson and notice how this teacher probes for seeking further information.
Miss Triptasia: How can we say that the food habits of man are largely controlled by the climate of the particular region where he dwells? Rani?

Rani: Man accepts those items for his diet which are easily available or found in abundance.

Miss Triptasia: Yes, can you make your answer clearer by giving an example?

Rani: Yes, for example the Eskimos consume fish and meat because they are easily available for them.

Miss Triptasia: That's right. Wouldn't you add something more?

Rani: They remove the oil and fat from the seal for cooking.

Miss Triptasia: Fine, that is a good response.

(You have just heard a short lesson using seeking further information technique of probing questioning.)
C: Now let us hear another technique called refocusing. We use refocusing when the pupil gives a correct response and you attempt to get the pupil to relate his initial response to other topics already covered in the class.

Refocusing is very useful technique as it helps pupils view their responses in relation to other similar situations and develop generalisation.

Your refocusing questions will generally start with such phrases as 'In what way is this different from?' or 'In what way is it similar to?' or 'How does it relate to?' or 'Can you find a parallel between this and something we talked about yesterday?'

Let us hear a refocusing sequence.
Miss Sneh:- What are the various means of transport which people can use for going from one place to another? Ranjana?

Ranjana:- People can go by bus, train, by air, on ship. They can also use bullock-carts, horses, camels etc. as means of transportation.

Miss Sneh:- Good. Can we compare our modern means of transport with those people used two hundred years ago?

Ranjana:- Of course, they could not go by bus, train or by air etc. as they were not invented at that time. But they could use horses and camels as means of transportation.

G: You must have noticed that teacher asked Ranjana to compare the present time means of transport with those of the past. This is
known as refocusing technique.
For more clarity, let us hear another lesson using the same technique.

Miss Tripta:- Rain is the main source of water. How do we get rain? Rita?

Rita:- Sea water evaporates, condenses, melts and forms rain and falls back into the sea.

Miss Tripta:- Can you relate this to any other phenomenon that you have already learnt?

Rita:- When water is boiled in a vessel which is closed by a lid, the water evaporates, condenses on the lid and falls back to the vessel.

Miss Tripta:- Yes. Very good.

C: You must have noticed that the teacher called for bringing about some connection between the two phenomena. This is called refocusing.
C: You have just heard a short lesson using refocusing technique of probing. Now let us hear its fourth technique, i.e., redirection. Redirection technique involves putting or directing the same question to several pupils for response. It is an effective way of reducing teacher's talk in classroom discussion and increasing pupil's participation.

C: It is a technique of framing questions in such a way that the question can be directed to several pupils rather than a single pupil. The teacher asks the question and redirects it to a number of pupils each of whom contributes to a complete answer. It has the advantage of increasing pupil participation and direct interaction among the pupils.
The response-response sequence is followed rather than the usual question-answer pattern.

To have more clarity about redirection technique let us hear a microlesson given by Miss Tripta where she asks suitable questions for redirection.

Miss Tripta:- What are the functions of Municipality?

Meena:- It looks after the health of the people.
Seema:- It open the Primary Schools.

Miss Tripta:- Very good, anyone else?

C: Teacher points at Neela.
Neela: Beautifying the City.
Miss Tripta: Can you add something else, Sunita?
Sunita: It makes provision for clean water, street-lighting and construction and repairs of roads in the city.

C: Here we notice that the teacher has asked the same question to several pupils. This is what we call the redirecting technique.

C: You must have noticed that the teacher got pupils' responses merely by calling names, asking if there was anything else, using clues like 'Can you add anything else?' and so on.

C: But keep in mind that this technique can be used successfully with the more thoughtful type of questions. Let us listen to anothe
teacher who is skillful in the use of redirection.

Miss Sneh: You must have seen different kinds of rocks? Tell me something about the different ways in which rocks are formed? Alka, you tell?

Alka: Some rocks are formed under the sea.

Rajinder: In the sea there are bits of things like sand and grit and these things settle at the bottom of the ocean and get pressed and turn into rocks.

Miss Sneh: Good, anyone else? Sita: Little pieces of shells from sea creatures become lime stone.

Miss Sneh: Yes, Rita?
Rita: Some rooks are formed by volcanoes.

Miss Sneh: Could you add anything to that, Seema?

Seema: Lots of red hot lava come pouring out of volcanoes and when it becomes cold it turns into solid rock.

C: Here we notice that when one student responded the same question was passed to another student and each of them contributed to the response. This is the redirection.

C: Redirection is very effective tool to reduce teacher talk in the class.

One reason of its being more effective is that it can be used in many different situations and with many other techniques. For example, when
there is a wrong response or no response or incomplete response, it is not necessary for the same pupil to be involved while using prompting or seeking further clarification. You may involve many pupils by putting them probing questions for inducing the expected response. Even after using prompting technique when there is no response you may redirect the same question to other pupils. Let us have more clarity by listening another instructional lesson. Miss Surita is teaching the characteristics of living beings.

Miss Sunita: What are the characteristics of living beings? Seema?
Seema: No response.
Miss Sunita: Geeta?

C: Here the teacher is redirecting the same question when there is no response.
Geetai: They reproduce.
Miss Sunitai: Yes, anyother, Rama?
Rama: They move.
Miss Sunitai: Anyother? Seema?
Seema: No response.
Miss Sunitai: Is there anything regarding their growth?

Radha: No response.
Miss Sunitai: Alka?
Alka: They grow.

C: Here you listen, the teacher is prompting.

C: You must have noticed that the teacher is redirecting the same question when there is no response even after giving clue or prompting.

C: While hearing the lessons you must have noticed that in all the examples the teacher asked for a group of facts or a set of information and not a single fact.
In order to get several responses from several pupils you must avoid the 'who', 'what', 'where' and 'when' questions because they call for a single fact and can be answered with a single word or phrase.

You should also avoid fill in the blanks type of questions. These generally compel the pupils to give a one-word answer.

Suggestive or leading questions should also be avoided where the pupils can give yes or no type of answers.

I am sure by now you must have got some idea of redirection technique from the three lessons you have just heard. Now let me briefly describe the fifth and the final component of probing
questioning and i.e. increasing critical awareness technique. It is another way to deal with completely correct responses. The purpose is to seek increased critical awareness in the pupil. The teacher asks the 'how' and 'why' of the responses. Let us hear an instructional lesson to clarify it more. Here is Miss Tripta teaching it...
Miss Tripta:— Very good.

You heard a lesson emphasising on increasing critical awareness. You may also bear in mind that questions that ask 'how', 'why' or 'explain' often require a pupil to use his information rather than repeat what he has learnt. Let us hear another lesson from Miss Sneh to make it more clear.

Miss Sneh:— Why are the banks of rivers called as the seats of ancient civilization? Rita?

Rita:— Our wandering ancestors blocked on the banks of these rivers and began to lead a settled life.

Miss Sneh:— Do you think that there was any special reason why people in olden times preferred to live on the banks of rivers?
You must have noticed that in order to answer such type of questions pupils have to make some kind of judgement or evaluation which call for higher order thinking. It increases the critical awareness of the pupils.

In increasing critical awareness technique the teacher asks the pupil to justify his response rationally. Here are some other examples. I will call your attention to the key word each time.

**Miss Triptai:** Why do you like the company of good friends?

**C:** Here the teacher has stressed on 'why' which requires a pupil to think and respond.

**Miss Triptai:** Explain what happens when the kettle boils?

**C:** Here the teacher demands explanation from the pupil.
Miss Tripta:- Do you think that it is good to have co-education up to school level?

C: The question put by the teacher makes the pupil to evaluate and judge and then respond.

Miss Tripta:- How can we say that the food habits of man are largely controlled by the climate of the particular region where he dwells?

C: Here again the question requires the pupil to think and then respond.

C: All these types of questions increase the critical awareness of the pupil. I think you are now clear about this technique. It is to go deep into the correct responses of the pupils and to increase critical awareness about the pupils' responses through questioning.
This concludes Instructional lesson one. Many teachers may find that they must replay the instructional lesson in order to learn more about the skill so that they can apply it in their microteaching session. For assessing your understanding, there are six questions. Your answers will help you decide whether you should replay the instructional lesson or not.

1. What are the five components of probing questioning?

(Pause)

2. When does a teacher ask prompting questions?

(Pause)

3. What kind of questions should you ask in order to make redirection possible?

(Pause)
4. How did seeking further clarification questions differ from prompting questions?

(Pause)

5. How can a teacher get more information from a pupil who answers by sheer guessing?

(Pause)

6. What type of questions will you ask your pupils in order to increase critical awareness in them?

(Pause)

If you are doubtful about your answers to any of these questions you replay the lesson later on and check your answers. You will find the answers of all these six questions in the instructional lesson.

You are now ready to hear model lesson one. It will show you the techniques of prompting, seeking further information.
refocusing, redirection and increasing critical awareness within the context of a classroom discussion.

Let us hear the model lesson. The students are discussing the importance of rivers with their teacher.

Mrs. Neer Kanwal :- Good morning children, name some of the rivers in India? Seema?

Seema :- Ganges.

Mrs. Neer Kanwal :- Is there any other? Rani?

Rani :- Yamuna.

Mrs. Neer Kanwal :- Why is Ganges known as the important river of India? Sita?

Sita :- Because it has religious importance.

Mrs. Neer Kanwal :- Can you add something more to your answer? Sita?

Sita :- Many religious places are situated on the banks of Ganges and the Hindus worship it as a goddess.

Mrs. Neer Kanwal :- What is the economic importance of river Ganges? Alka?

Alka :- No response.
What do the rivers bring when they come from the mountains?
They bring fertile soil along with them.
What do they do with that fertile soil?
They spread it on their banks when their speed becomes slow in plains.
Is it of any use? Sunlta?
It makes the land fertile.
Can you name any region which is made fertile by the rivers of India?
The regions of Ganga and Sindh.
Are these rivers always useful? Seema?
No response.
What happens when these rivers overflow?
The floods come and cause destruction.
What steps the Government has taken to stop these floods? Rita?
Government has built dams on them.
Can you name the dam which is built on one of the important rivers of India?
Bhakra Dam.
Mrs. Neer
Kanwal -: Any other, Rajinder?
Rajinder -: No response.

Mrs. Neer
Kanwal -: Which is the Dam built on Bias river?
Rajinder -: Pong Dam.

Mrs. Neer
Kanwal -: So, why do we build these dams?
Rajinder -: To stop floods.

Mrs. Neer
Kanwal -: Sita?
Sita -: To get electricity.

Mrs. Neer
Kanwal -: Any other, Seema?
Seema -: No response.

Mrs. Neer
Kanwal -: How have we made the barren lands of Rajasthan fertile?
Seema -: With the water of rivers.

Mrs. Neer
Kanwal -: So, what is the next use of rivers?
Seema -: They make land fertile.

Mrs. Neer
Kanwal -: Rajinder, why are these rivers important then?
Rajinder -: They are important in the religious and economic life of the people.

Mrs. Neer
Kanwal -: Very good.
You have just heard the model lesson one. Now you practise the skill, tape your microlesson and evaluate it on the two different observation schedules meant for the skill of probing questioning.

Now I shall explain how these observation schedules are to be used. In the first observation schedule the names of the components of the skill in a serial order are given on the left hand. On the right side are given the cells opposite each component to mark tallies. Mark the tallies for the occurrence of instances for each of the components.

The second observation schedule for the skill of probing questioning is meant to ascertain the extent to which the student-teacher uses the skill. Judgement has to be given on a seven point scale for various aspects of the skill by crossing the appropriate number you deem fit. The scale value of '0'
indicates that the student-teacher did not use the concerned aspect of the skill at all and the scale value '6' means that the student-teacher practised the skill aspect very much.

Keeping these two extremes in view examine carefully your behaviour related to the given aspects of the skill and cross the appropriate value ranging from zero to six against each aspect of the skill given in the schedule.

In this way you can judge your own progress and can make improvements accordingly.

THANK YOU.
BACKGROUND COMMENTS

You will now hear a short description of microteaching course on skill of explaining which has been developed at Dev Samaj College of Education for Women, Ferozepur City.

(Pause)

C: This is a self-instructional microteaching course.

(Pause)

C: Its complete title is skill of explaining.

(Pause)

C: This microteaching course is an adaptation of the self-instructional material developed by a team engaged in research in microteaching at Centre of Advanced Study in Education, Baroda.

(Pause)

C: This self-instructional course is produced by the efforts of Miss Rajwant Kaur under the guidance of Dr. (Miss) Saroj Srivastava.

(Pause)
C: You have completed the instructional sequence one of this course. Now on this tape you will hear the instructional lesson and model lesson of instructional sequence two. It tells us about the skill of explaining, how to practise desirable behaviours and avoid undesirable behaviours for developing the skill of explaining effectively.

An explanation is a set of interrelated statements made by the teacher related to the phenomenon, concept or an idea in order to bring about understanding in pupils about it.

It involves filling up the gap in his understanding of the new phenomenon by relating it to his past experience.

Explaining is a process of relating an object, phenomenon, action or state of affairs to
other objects, phenomena, actions or states of affairs to enhance the understanding of the former. This relationship is brought out by giving rules, empirical generalisations and deductive reasoning etc.

In short, when a teacher is describing 'How', 'why' and sometimes 'what' of concept, phenomenon, event or condition, we can say that he is explaining. To make it more clear, let us hear some examples which require explanation. I will call your attention to key words each time.

Mrs. Neer Kanwal: How is hydro-electricity generated?

C: The response of this how of generation here is explanation.

Mrs. Neer Kanwal: Why does sugar industry flourish in Uttar Pradesh?

C: Here again the response is an explanation.
Mrs. Neer Kanwal: What happens when the kettle boils?

C: Here the teacher demands explanation from the pupil.

Mrs. Neer Kanwal: What is the reason for not using white phosphorus in safety matches?

C: Again the emphasis is on 'what' which needs explaining.

Mrs. Neer Kanwal: Why do aeroplanes really fly?

C: The response is again explaining the principle working in the process of flight.

C: All these types of questions require explanation. I think you are now clear about this skill. It is not just telling or giving information. When the teacher is answering the questions like 'who', 'where', 'when' and sometimes 'what' he is not explaining but only giving information or narrating.
To master the skill of explaining, the teacher has to increase the desirable behaviours namely - using explaining links, using beginning and concluding statements and testing pupils' understanding.

At the same time the teacher has to avoid or decrease the undesirable behaviours as stating irrelevant statements, lacking in continuity in statements, using inappropriate vocabulary, lacking in fluency and using vague words and phrases.

Let me explain first the undesirable teacher behaviours one by one.

The first desirable behaviour which the teacher should practise is 'using explaining links.'

It involves using linking words and phrases in the statements of an explanation. These links bring
continuity in the statements. To have more clarity let us hear some examples. Each time I will call your attention to explaining links used in the statements.

Miss Snehi—After the death of Maharaja Ranjit Singh his successors began to fight among themselves. As a result the Sikh kingdom fell in the hands of the Britishers.

C: Here 'after' and 'as a result' are the linking words.

Miss Snehi—People in the olden times could not travel by bus, train or by air because they were not invented at that time.

C: In this statement the linking word 'because' is used to tell the reason of not using the modern means of transportation in olden days.
Miss Sneh:* Kaikeyi wanted Rama to quit the palace in order that her son Bharata could become the king.

C: Here the word 'in order that' is used as a linking phrase to tell the reason behind the banishment of Rama.

Miss Sneh:* There will be a lot of humidity in the air during the rainy season. That is why clothes do not get dried quickly.

C: The linking phrase used in this statement is 'that's why.'

Miss Sneh:* The purpose of using switch in an electric circuit is to break or close the circuit whenever needed.

C: Here the phrase 'the purpose of' is the explaining link used in this statement. It tells the reason for using the switch.
Mise Sneht- Ashoka had distinguished himself as a great general and an able administrator when he was a Viceroy of Taxila and Ujjain. Therefore his father Bindusara chose him as his successor, though he was not his eldest son.

C: In this statement the linking word used is 'therefore'.

C: You have just heard the statements in which some explaining links were used. Generally these explaining links indicate the causes, consequences, reasons behind, means or purposes of an event, concept or condition.

These links help in the clarification of the concept or rule. You should use as many explaining links as possible to make your explanation effective.

Now let me explain the second component of the skill of explaining
and that is 'using beginning and concluding statements.'
These statements do not contribute directly to the understanding of what has been explained. But the beginning statements make the students mentally ready to listen to what is going to be explained. The concluding statements help in consolidating and summarising what has already been explained.
To make it more clear let us hear a microlesson. The teacher is explaining how a sea-breeze is caused.

Miss Triptai- A sea-breeze is the wind that blows from the sea towards the land.
Now we will see how a sea-breeze is caused.

C: Here the teacher has made beginning statements to make the pupils aware that she (the teacher) is going to explain how the sea-breeze is caused. So they are prepared to listen.
Miss Tripta:- You all know that the land gets heated more quickly than water. Hence during day time, land near the sea-shore gets heated more quickly than the sea water. Therefore, the air above the land gets heated up more quickly than the air above the sea. This warmer air above the land rises up as it is light. As a result, the cooler air above the sea blows towards the land to occupy its place. This is called sea-breeze and this is how sea-breeze is caused.

C: You must have noticed that the teacher has concluded the explanation and it has given the idea to the students that she has explained how the sea-breeze is caused.

C: Sometimes explanations will be lengthy. Then you
can use more than one beginning statements to give the overall picture or structure of the explanation. Similarly, you will use more than one concluding statements. They give the major points in the explanation in a consolidated form. Let us hear a microlesson to make it more clear. Miss Tripta is explaining the digestive system in human body.

Miss Tripta: Now I will explain how food is digested in human body. You will observe how the food goes on mixing with saliva while chewed in the mouth, enters the stomach through the food pipe then into the intestines and how the gastric juices help in the digestion of the food.

C: Here the teacher has given the overall picture of the explanation by using many
beginning statements. Now the pupils are clear about what is going to be explained.

Miss Triptai—We put the food in the mouth. In the mouth the food is chewed and mixed with the saliva which is secreted from the salivary glands. Here the carbohydrates partially digested and are converted into glucose. Then the food is passed into the stomach. In the stomach the food comes in contact with gastric juices which contain pepsin, Ranin & cyastic lipase. Hydrochloric acids present in the stomach kill the microorganisms present in the food.

Semi-digested food is led into small intestine. Bill juice and pancreatic juice help in the complete digestion of fats, carbohydrates and proteins.
Then the fully digested food is absorbed through the wall of small intestine and the absorption of water takes place by the walls of large intestine. Undigested food is passed out through the rectum. This is how the food is digested in a human body.

To sum up, the food is chewed in the mouth and mixed with the saliva and carbohydrates are partially digested and converted into glucose. Then it is passed into the stomach. There the gastric juices help in further digestion. After that, it is led into small intestine where it is fully digested and absorbed through the wall of small intestine.

You must have noticed that in the end the teacher gave the gist of the explanation by using many concluding statements. These statements
help in the better understanding of the subject-matter. You have just heard the microlesson using the beginning and concluding statements. Now I will explain the third desirable behaviour to be developed by the teacher. It is 'testing pupils' understanding.

This behaviour of the teacher involves putting questions to pupils to test whether they have understood what has been explained. It helps in knowing whether the purpose of explaining the concept or phenomenon has been achieved or not.

In order to judge the understanding of the pupils, put two or three questions based on the key points.

In order to make it more clear, let us hear a short instructional lesson.
The teacher is explaining why the amount of heat that we receive from the sun varies.

Mrs. Neer Kanwal: You must be wondering why the summer months are warmer than the winter months or the day is warmer than the night. Its simple reason is that the amount of heat that we get from the sun is not always the same. During the day, the sun shines and at noon, the rays of the sun fall at a higher angle above the ground. When the rays are slanting, they pass through a greater distance through the atmosphere and they lose more heat. Secondly, these slanting rays are more widely scattered on the earth surface and thus have less heating power. Similarly, we are nearer the
sun during the summer than the winter. That's why the summer is hotter than the winter. So we find that the amount of heat that we receive from the sun varies with the time of the day and the time of the year.

Mrs. Neer Kanwal J- Now tell me, why are the days hotter than the nights? Sita?

Sita :- Because the sun shines during the day and its rays fall straight.

Mrs. Neer Kanwal J- Why do slanting rays lose their heat? Rajinder?

Rajinder :- Because they have to pass through a greater distance in the atmosphere and thus they lose more heat.

Mrs. Neer Kanwal J- Why is the summer hotter than the winter? Rani?

Rani :- Because during summer we are nearer to the sun. So we get more amount of
You have just heard a short lesson. In this way, the questions should be asked after explaining the concept or idea. It helps in evaluating the effectiveness of explaining. This is known as 'testing pupils' understanding.'

You have heard about the desirable behaviours to be developed for effective explaining. Now let me explain in brief, the undesirable behaviours to be avoided by the teacher for developing the skill of explaining. These undesirable behaviours are 'stating irrelevant statements', 'lacking in continuity in statements', 'using inappropriate vocabulary', 'lacking in fluency' and 'using vague words or phrases'. I will explain them one by one.

The first undesirable behaviour the teacher should avoid, is
stating irrelevant statements. A statement in explaining said to be irrelevant when it is not related to the concept or does not contribute to the understanding of the concept or phenomenon being explained. Such statements hinder the pupils' understanding and distract their attention from the subject of explaining.

Let us hear a short lesson for its clarity. The teacher is explaining how the sea-breeze is caused.

Miss Sneh: You must have visited the sea-shore. You must have felt pleasant to be there. Why did you feel pleasant there? You must have experienced a cool breeze blowing from the sea towards the land. It is called sea-breeze. The land gets heated faster than the sea water. The
air above the land gets heated more quickly than the air above the sea. You must have visited the sea shore. I think you must have touched the sea water in the evenings. It is warm. So the hotter air above the land rises up and the cool air above the sea blows towards the land to equalise the pressure. This is how, the sea breeze is caused.

C: You must have noticed in the explanation that the beginning statements are irrelevant, as they do not contribute to the understanding of the concept. Similarly, the statements of visiting the sea-shore or touching the water are irrelevant as they are not related to the topic. These types of statements should be avoided as they confuse pupils.
The second undesirable teacher behaviour is 'lacking in continuity'. It means break in the sequence of ideas or information given during explaining. This continuity breaks when a statement is not logically related to the previous statement, or when a topic already taught is referred to without showing its relationship with the subject of explaining, or when there is no sequence of place or space in the contents, or when there is no sequence of time, or when the statements are irrelevant.

Now let me explain these situations one by one, by giving examples. The teacher is explaining why the rat can be classified under mammals. Here the statements are not logically related to each other.
Mrs. Neer
Kanwal: Rat is not a cold-blooded animal. It does not lay eggs. It is not a reptile. Therefore, it is a mammal.

C: You must have noted that in these statements there is no continuity between the second and the third statements, and between the third and the fourth statements. So it breaks the continuity in explaining.

Sometimes, this continuity breaks when the teacher refers to a topic already taught without showing its relationship with the subject of explaining. For more clarity, let us hear a short lesson.

The teacher is explaining how the fog is formed.

Miss Tripta: Fog is a thin cloud-like formation
Fog is formed on account of the fall of temperature of air below the dew point and it spreads over a vast area. Hence, it is the result of condensation of water on dust particles.

You must have noticed that the teacher is referring to an earlier topic of the existence of water vapours in the air without telling its relation with the formation of fog. This situation causes break in continuity.

This continuity also breaks when there is no sequence of space.

To have more clarity, let us hear another microlesson. Here is Mrs. Neer Kanwal, teaching digestive system to IX class.
Mrs. Neer
Kanwal: In the mouth the food is chewed. Then it is passed into the stomach. Before going into the stomach, the food is mixed with the saliva in the mouth and carbohydrates are partially digested and are converted into glucose. Then, it is passed into the stomach where the food is further digested by gastric juices. Then, it goes into the small intestine and is fully digested there. It is absorbed through the wall of small intestine and the absorption of water takes place by the wall of large intestine. Undigested food is passed out through the rectum.

C: You must have noticed that the teacher while explaining the process of
digestive system is missing the sequence of steps or places through which the food goes up to large intestine and then up to the rectum.

Q: This continuity also breaks when there is no sequence of time. It means when a teacher does not give the sequence of events in a particular chronological order it lacks time sequence and continuity breaks. Let the teacher explain this undesirable behaviour through a short lesson. She is explaining how the first Sikh war ended.

Miss Sneh:- In the first Sikh war in 1845, the Sikh army was defeated at Ferozeshah. A few days before it, they were defeated at Mudki and were forced to surrender at Aliwal and Sahbraon also.
So, with the treaty of Lahore this war ended.

C: You must have noticed that in this explanation, the teacher did not explain the events in a serial order as the battle of Mudki was fought first and then they fought at Ferozeshah and other places. This is known as lack of time sequence.

Lastly, the irrelevant statements also break the continuity. As you have already told, those statements are said to be irrelevant which are not related to the topic being explained.

C: You have just heard a detailed description of undesirable teacher behaviour i.e. 'lacking in continuity'. When there is no continuity in the explanation, it creates confusion among pupils and hinders their understanding.
The third undesirable behaviour which the teacher should avoid is 'using inappropriate vocabulary'. Vocabulary becomes inappropriate when we use the terms which are unknown to most of the pupils of that age group. Sometimes the terms used are above the mental level of pupils.

For more clarity let us hear a short lesson in which the teacher is using some technical terms to explain rainfall. Here is Miss Tripta explaining to the VII Class how rain is caused.

Miss Tripta: Now I will tell you how the rain is caused. The sea water evaporates with the heat of the sun and gets condensed in the sky to form clouds. When these rain-laden clouds
rise up, they expand and become cooler. In doing so, the saturation point is reached and water vapours condense. Precipitation in the form of rain drops takes place. Because these rain drops are heavy, they fall to the ground. This process is called rainfall.

C: You must have noticed that the technical words like evaporation, saturation point and precipitation etc. are inappropriate as the VII class students cannot understand these words. So the teacher should avoid to use inappropriate words for making his explaining effective.

Now I will explain the next undesirable behaviour and i.e. 'lacking in fluency'. There is a lack in fluency when the teacher speaks half sentences or reformulates the sentences.
or statements without completing their first form. Let us hear a microlesson which indicates how lack in fluency can occur while explaining. The teacher is explaining why a man lifting a bucket of water bends to the other side of the bucket.

Mrs. Neer Kanwal :- Can anyone.....

No........ Do you know, why a man lifting a bucket full of water bends to the other side of the bucket? It is because of this reason. You know that the centre of gravity of man... say ... centre of gravity of any static object will be within the base. So also with the man. When he carries...... No.... when the man is standing, his centre of gravity will be within the base. When he lifts
weight or when he lifts bucket full of water, the position of his centre of gravity is disturbed. So, in order to keep it within the base he bends... I mean, on the other side of the weight.

C: You must have noticed how the teacher uses incomplete sentences and reformulates the statements without completing their previous form. These types of statements obstruct the natural flow of explanation. It distracts the attention of pupils and hinders their understanding of the topic of explanation.

C: You have just heard about the fourth undesirable behaviour. Now let me explain the fifth and the last undesirable behaviour and i.e. 'using vague words and phrases.'
You can call such words and phrases vague, the use of which indicates that the teacher is failing to make something clear. Some such words and phrases which are generally used are 'things', 'a little', 'might', 'few', 'actually', 'some', 'many', 'much', 'something', 'probably', 'perhaps', 'may', 'in fact', 'seems', 'somewhat', 'the rest', 'almost', etc.

It also includes the words which are often repeated by the teachers without any purpose as 'you see', 'you know', 'correct', 'understand', 'am I clear'? etc. It becomes their habit to use these words frequently. The use of these words makes the explanation vague and thus hinders their understanding. For having more clarity let us hear an
Miss Sneh:—You see, it may be that they do not like to stay at a place. Sometimes it may happen that food or some such thing is in shortage. You see, probably it has become their habit to move from place to place.

C: You must have noticed that the teacher had used many vague phrases like 'you see', 'sometimes', 'you see probably' or 'some such things' etc. The use of such phrases show that she is not clear in her explanation. These vague words and phrases do not help in explaining any concept or idea.

You have just heard how the use of vague words and phrases hinders the understanding of what is being explained.
This concludes instructional lesson two. Many teachers find that they must replay the instructional lesson in order to learn more about the skill, so that they can apply it in their microteaching session. For assessing your understanding, there are five questions. Your answers will help you decide whether you should replay the instructional lesson or not.

1. What are the desirable teacher behaviours for developing the skill of explaining effectively?

2. What is the aim of using beginning and concluding statements?

3. Why should we test the understanding of pupils after explaining?

4. What are the undesirable behaviours that the teacher should avoid for effective
explanation?
5. What types of statements would you call irrelevant?

C: If you are doubtful about your answers to any of these questions you replay the lesson later on and check your answers. You will find the answers of all these five questions in the instructional lesson.

You are now ready to hear model lesson two. It will show you the techniques of explaining within the context of a classroom discussion.

Now let us hear a model lesson. The teacher is explaining the tides.

Miss Tripta:— Nature has different phenomena. One such natural phenomenon that frequently occurs is the tides. Today we shall learn what are tides, how are they caused and their types.
When we go near the sea-shore we see that sea-water goes twice up and twice down in a day. When the water of the sea goes up the dry area near the sea is filled up with water to a large extent. But slowly that water goes down and with the result that area again becomes dry. This up and down of sea-water is known as tides.

Now we will study the reason of tides. As you know, all the bodies and planets attract each other and this attraction is known as the gravitational pull. The main reason of tides is the gravitational pull of the sun and the moon. As the sun is bigger in size, it has more gravitational pull. Since, it is farther from the earth, its gravitational pull does not have much effect. In comparison to it, the moon may be smaller, but, as it is nearer to the earth it has more gravitational pull than the sun. The gravitational pull of the moon has equal effect on land and water. But water being liquid rises upwards. Thus the tides are because of the gravitational pull of the moon.

These tides are of two types:

(a) Spring tides.
(b) Neap tides.

Now we shall study about these two types of tides.

(a) Spring Tides: On the days of full moon, the sun, the earth and the moon are on one straight line. Thus, the combined
gravitational pull of the sun and the moon has greater effect on the earth. As a result, the tidal waves are higher on these days than these are on other days. These are known as spring tides.

(b) Neap Tides: The second type of tides are neap tides. On the eighth day of the full moon the sun and the moon are at 90° angle. Due to this, the gravitational pull of the moon does not have much effect. The gravitational pull of the sun has its effect on the opposite direction of the moon. Because of this, the waves do rise upward but their height is lesser than it is on other days. These are known as neap tides.

Thus, tides are caused because of the gravitational pull of the moon and these tides are of two types. Let me now ask you some questions.

Miss Tripta: What are tides? Sita?
Sita: When we go near the sea we see that seawater goes twice up and twice down in a day. This up and down of water is known as tides.

Miss Tripta: How these tides are caused? Meena?
Meena: The sun and the moon have their gravitational pull on the earth. The sun is bigger in size, so, it has more gravitational pull. Since, it is farther from the earth,
its gravitational pull does not have much effect. In comparison, the moon is smaller in size but, as it is nearer to the earth, it has more gravitational pull than the sun. With the gravitational pull of the moon, water of the sea rises upwards. So the tides are caused because of the gravitational pull of the moon.

Miss Tripta :- How are spring tides caused? Seema?
Seema :- On the days of the full moon the sun, the earth and the moon are on one straight line. Thus, the combined pull of the sun and the moon has greater effect on the earth. Due to this combined effect the tides rise higher on these days. This is how spring tides are caused.

Miss Tripta :- Very good. How are neap tides caused? Rani?
Rani :- On the eighth day of the full moon, the sun and the moon are at 90° angle and their gravitational pull has its effect in opposite directions. Due to this the gravitational pull of the moon does not have much effect on the earth. As a result, the waves do rise upward but their height is lesser than it is on other days. This is how neap tides are caused.

O:- Well students, you have just heard the model lesson two. Now you practise the skill, tape
your microlessons and evaluate them on the two different observation schedules meant for the skill of explaining.

Now I shall explain how these observation schedules are to be used. The first observation schedule is divided into two parts. In the first part, desirable behaviours namely explaining links, beginning statements, concluding statements, questions to test pupils' understanding, questions followed by correct pupil responses have been written. In the second part, undesirable behaviours namely irrelevant statements, lacking in continuity, inappropriate vocabulary, lacking in fluency, vague words and phrases have been given. Mark the tallies for the occurrence of instances for each of the desirable and undesirable
teacher behaviours. Under each of the questions to test pupils' understanding, put a tick mark (✓) if followed by correct responses.

The second observation schedule for the skill of explaining is meant to ascertain the extent to which the student-teacher uses the skill. Judgements have to be given on a seven point scale for various aspects of the skill by crossing the appropriate number you deem fit. The scale value of '0' indicates that the student-teacher did not use the concerned aspect of the skill at all and the scale value '6' means that the student-teacher practised the skill aspect very much. Keeping these two extremes in view, examine carefully your behaviour related to the given aspects of the skill and cross the
appropriate scale value ranging from '0' to '6' against each aspect of the skill given in the schedule.

In this way you can judge your own progress and can make improvements accordingly.

THANK YOU
INSTRUCTIONAL SEQUENCE THREE

BACKGROUND COMMENTS

You will now hear a short description of microteaching course on illustrating with examples which has been developed at Dev Samaj College of Education for Women, Ferozepur City.

(Pause)

C: This is a self-instructional microteaching course.

(Pause)

C: Its complete title is skill of Illustrating with Examples.

(Pause)

C: This microteaching course is an adaptation of the self-instructional material developed by a team engaged in research in microteaching at Centre of Advanced Study in Education, Baroda.

(Pause)
C: This self-instructional course is produced by the efforts of Miss Rajwant Kaur under the guidance of Dr.(Miss) Saroj Srivastava.

(Pause)

C: You have completed the instructional sequence two of this course. Now on this tape you will hear the instructional lesson and model lesson of instructional sequence three. It tells us about the skill of illustrating with examples, its objectives and components.

The main objective of the skill is to clarify the abstract concepts, ideas or principles and to create interest in learning and hence promote learning among pupils.

When it seems difficult
to make pupils understand the abstract idea or concept or principle, then the teacher can make it clear and simple through examples. To make it clear let us hear an instructional lesson. Miss Tripta is teaching evaporation of water.

Miss Tripta :- Children,
when we take water and boil it what happens? Yes, Rani?
Rani:- Vapour comes out.

Miss Tripta :- Yes. If you drop water on hot ground what happens? Sita?
Sita:- It disappears quickly.

Miss Tripta :- Good! What happens to wet clothes when placed in the sun? Rajinder?
Rajinder :- It dries up.

Miss Tripta :- Yes, right. Where does the water go?
Rajinder :- It goes into the air.
Miss Tripta :- What do you observe in all these examples? Ranjana?
Ranjana :- Water becomes vapour.
Miss Tripta :- This is called evaporation. Children, now you should give some examples.

0: You must have noticed that the teacher is explaining the concept of evaporation through giving different examples so that the pupils can understand it well. This is known as Illustrating with examples.

The important components of the skill of illustrating with examples are: formulating simple examples; formulating examples relevant to the idea or the rules; formulating interesting examples; using appropriate media.
for examples and using examples by inducto-deductive approach.

Let us first consider the technique of 'formulating simple examples'. While using this skill examples should be simple which means examples should be formulated from pupils' previous knowledge. The teacher should try to give examples from the previous knowledge of the pupils to make the concept, idea, principle or rule clear and understandable to pupils.

You can judge the simplicity of the examples from two points. One is from pupils' participation. If the examples are simple the pupils will give correct responses to the teacher. Secondly, we can judge by observing the teacher-statements such as 'you have learnt that', 'In the previous class you have told or noted that' etc.
Let us hear the microlesson in which the teacher is using the simple examples based on pupils previous knowledge.

Mrs. Neer Kanwal :- I am going to tell you three situations. Tell me what the word 'envy' means?

1. Rani wears new clothes in the college daily. So her poor friends envy her richness.

2. When a new comer Ram was promoted in his office, his colleagues envied his success.

3. When Alexander became friendly with Poras, his neighbour king Ambhi envied his friendship with Poras.

Now tell me what does the word envy mean? Sunita?

Sunita :- To feel jealous.
Mrs. Neer Kanwal: Give a sentence of your own using that word.

Sunita: Rajinder is in the good books of her teachers because of her good nature and intelligence. So, all other students of our class envy her popularity among teachers.

Miss Sneh: Here you must have noticed that the teacher has used simple examples as pupils could easily derive the meaning of the concept.

Simple examples are also used to illustrate the rules. Let us hear another lesson. Miss Sneh is clearing the rule by giving many examples based on pupils' previous knowledge.

Miss Sneh: Children, in the previous class you have learnt about the three states of matter? What are they? Rani?
Rani :- They are solid, liquid and gas.

Miss Sneh :- Today, let us learn that these states are inter-changeable and this inter-changeability occurs due to heating or cooling.

Miss Sneh :- Some solid substances when heated change into liquid and liquids when cooled change into solids. Let us take an example. What happens to wax when heated? Sita?

Sita :- It changes into liquid.

Miss Sneh :- Good, wax when heated turns into liquid. Now you should give some more examples. Rani?

Rani :- When ice piece is heated it changes into water.

Miss Sneh :- Yes, Rajinder?
Rajinderi: When sealing wax is heated it melts into liquid.

G: Here the pupils are giving examples of their own which shows that the examples used are simple.

Miss Sneh: - Right, what happens to liquid wax when cooled? Ranjana?

Ranjana: - It becomes solid.

Miss Sneh: - Similarly, ghee, when heated, becomes liquid and when the liquid ghee cools down it turns into solid. Give some more examples of liquid cooling down into solids. Rani?

Rani: - Yes, ice when heated turns into water and same water when cooled, freezes into ice.

Miss Sneh: - What do you infer from the above examples? Radha?
Radha: We infer that substances change their state when heated or cooled.

C: From this lesson we can say that the examples used to arrive at the rule are simple. It is also revealed from the correct responses of pupils. Such simple examples bring out clear understanding in pupils about the rule.

C: But be sure that the examples should not be simple only, they should also be relevant to the principle or rule. This is the second component of the skill of illustrating with examples, i.e. 'formulating examples relevant to the idea or rule'.

You can call the examples relevant if they are applicable to the concept or idea which you have to illustrate.
Let us hear a microlesson in which Mrs. Neer Kanwal uses the relevant examples to clear the concept that temperature is directly proportional to pressure.

The thermometer and barometer are fit in a two-walled vessel with an adjusted air tight piston. Mrs. Neer Kanwal is showing thermometer and barometer to the pupils to read.

Mrs. Neer
Kanwal: What is the temperature on the thermometer, Sita?

Sita: 33°C

Mrs. Neer
Kanwal: What is the reading of the barometer? Rajinder?

Rajinder: 760 mm of the mercury level.
Mrs. Neer
Kanwal :- Now I am pushing
the piston downward just to
increase the pressure inside
the vessel. What is the
effect of increasing pressure
on the temperature? Rani?

Rani :- The temperature has
also increased.

Mrs. Neer
Kanwal :- Yes, right. Now I
am pulling the piston upward to
lower the pressure in the vessel.
Note the temperature again? Meena?
Meena :- The temperature has
also decreased.

Mrs. Neer
Kanwal :- What do you infer from
this? Sunita?

Sunita :- We infer that temperature
increases with the increase in
pressure and decreases with the
decrease in pressure.

Mrs. Neer
Kanwal :- Very good. So,
temperature is directly proportional
You must have noticed that the teacher was using the relevant examples to clear the concept and it is revealed as the pupils are inferring the rule from the examples given by the teacher.

Let us hear another microlesson regarding the relevancy of examples. Here is Miss Tripta teaching to IX Class.

Miss Tripta: How do you know that certain gases dissolve in water? Meena?
Meena: No response.
Miss Tripta: Alright, let us take a simple example. You must have seen a bottle of soda water or any aerated water. What happens to the soda water when you close the mouth of the bottle with thumb and shake?

C: The teacher points at Rani who has raised her hand.
Rani: Bubbles can be seen to rise from water.

Miss Tripta: Do you feel something pushing against your thumb?

Rani: Yes.

Miss Tripta: What happens when you lift your thumb from the top of the bottle? Sunita?

Sunita: Some hissing sound comes.

Miss Tripta: Yes, the gas which is inside the bottle escapes with a hissing sound. Where did the gas come from?

Sunita: The gas came from Soda water.

Miss Tripta: This gas was dissolved in the soda water. So we can understand that gases dissolve in water.

*Here we notice that with the help of relevant examples*
the pupils have understood the rule that certain gases dissolve in water. The rule may be in the form of a theme derived from a story.

Let us hear another lesson using the same technique for forming a theme.

C: Here the teacher has told the story of Yudhishtera and explained that he was called a 'truthful man'. After explaining the story now she asks the questions from the class.

Miss Sneh: So, Yudhishtera was called a truthful man. Children, you have read many stories. Tell me the name of any person who was truthful throughout his life? Sita?

Sita: Mahatma Gandhi remained truthful throughout his life.
Miss Sneh: Good, it means you have understood the concept. Give some more examples of persons who were truthful.

C: You have just heard a short lesson using the technique of formulating relevant examples to the rule or idea. Now let us hear another technique i.e. 'formulating interesting examples'.

C: An example is said to be interesting when it can arouse curiosity and interest in pupils. This can be judged by observing the behaviour of the pupils. The pupils will show their interest and curiosity by asking such questions, 'what happened further?' 'What did they say?' etc. Their interest can also
be observed by their attending behaviour which can be verbal in giving responses as the teacher gives the example. It can also be non-verbal behaviour in the form of erect posture, looking attentively at the teacher etc.

To make it more clear, let us hear a microlesson given by Miss Tripta. She wants to explain that when the Indians were not united they came under the foreign rule and when they became united they were able to get freedom from foreign yoke. She is giving an interesting example to explain this idea.

Miss Tripta: There lived an old man. He had three sons. They always quarrelled with one another. The farmer was very unhappy. He wanted to reform them.
Sita :- Madam, what did he do then?

Miss Tripta :- Yes, one day he brought a bundle of sticks. He called all his sons and asked them to break the bundle of sticks.

Rajinder :- Madam, were they able to break the sticks?

Miss Tripta :- They said, "No, we cannot do it". So no one succeeded in doing it.

He untied the bundle and then asked his youngest son to break the sticks one by one. He was able to do it easily.

G: It shows that the pupils are listening attentively and there is curiosity in them.

G: Pupils' faces indicate that they are interested and they are sitting erect on their benches.
Miss Tripta :- The farmer told them, "My sons! here is a lesson for you. If you remain united you will stand and nobody will be able to harm you. But if you are divided you will fall."

Similarly, the Indians under the British rule felt that they could fight the battle against them if they remained united. So the national sentiments grew rapidly among the people and the whole country was unified under one banner and it got freedom in 1947.

Rani :- Even in the reign of Maharaja Ranjit Singh the people of Punjab were united and the Britishers were not able to invade Punjab. But after the death of Maharaja Ranjit Singh, when there was no unity, the Britishers took
advantage of this and the Sikh kingdom passed into their hands.

Miss Tripta: Good, so you have understood that if there is no unity the third person takes advantage of it.

C: You must have noticed that the pupils were taking full interest in the example. From their attending behaviour we can judge that the example used was interesting.

An interesting example should also be according to the age level, maturity level, cultural and geographical setting and understanding capacity of the class as a whole.

C: You have just heard a microlesson on the technique of formulating interesting
examples. But these simple, relevant and interesting examples, will become ineffective if they are not conveyed through proper way. So, appropriate media should be used for giving examples. This is the fourth component of the skill of illustrating with examples.

Examples can be conveyed in two ways, i.e. verbally and non-verbally. In verbal media we can explain the concept or idea or rule through oral description of the situation where the principle or concept find application. We can tell stories or give analogies. For example, you want to clear the idea of Honesty to the lower grade pupils. In order
to illustrate the concept
you can tell them the story of
"An Honest Wood-cutter."

Similarly, in the higher
classes the teacher can
illustrate the concept by
giving similar examples orally
from pupils' previous experiences.

But sometimes the concept
may be a difficult one and the
pupils are not able to comprehend
it through oral description. At
that time you can use the non-
verbal media to make the concept
more clear.

In non-verbal media you
you can include the use of
concrete objects, models, charts
and pictures, diagrams, maps and
sketches and experimental
demonstrations.

These non-verbal examples
can be used according to the
standard, unit and the level of
abstractness of the concept. For example, you can use the concrete objects in lower grades as children of lower age have lower capacity of understanding.

Similarly, you can use models or pictures to illustrate an idea or concept. Sometimes these models or pictures are more suitable than the real objects. For example, if you want to explain the structure of heart, then its model will be more appropriate than a real heart.

You can also use diagrams, sketches, maps and charts to clarify and bring out essential points in the lesson, just as a teacher, while clarifying the functions of a river, can make sketches on the blackboard.
Experimental demonstration is another way of illustrating the concepts. If a teacher wants to explain the idea of formation of day and night then she can conduct the required experiment in the class.

All these non-verbal media cannot be effectively used without an oral explanation. This explanation can be given either by the teacher or by the pupils.

But be careful that the media used for giving examples should be appropriate. That media is said to be appropriate which is suitable for the age level, grade level, maturity level of the pupils and the unit taught.

As the pupils of lower age level need concrete objects to understand a concept, for them
any of the non-verbal media should preferably be used. Sometimes even higher classes require a model or a chart to comprehend a concept. For example, when a teacher is teaching about Bhakara Dam, she can use its model or chart for explanation.

Appropriateness of a medium also depends upon the nature of the unit being taught. A teacher who is teaching that acids turn litmus red must demonstrate this by doing experiments with a number of acids in the class.

You have just heard some points regarding the appropriate media for examples. Now let me explain the fifth and the last component of the skill and that is 'using examples with inductive-deductive approach.'
You can make use of two approaches for illustrating. These are: inductive approach and deductive approach.

In inductive approach the teacher gives a number of examples related to a concept or rule and then infers the rule on the basis of these examples.

To make it more clear, let us hear a microlesson and see how Mrs. Neer Kanwal makes use of this approach.

Mrs. Neer Kanwal: Well students, why does smoke go upward?

Rani?

Rani: Because it is lighter than air.

Mrs. Neer Kanwal: When we boil water, in what direction do the vapours rise?

G: The teacher is looking towards Sunita intending that
Sunita: They rise in the upward direction.

Mrs. Neer Kanwal: Why?

Sunita: Because steam is lighter than air.

Mrs. Neer Kanwal: Good. Why does a balloon, filled with hydrogen gas, go in upward direction?

Sita: Because it is lighter than air.

Mrs. Neer Kanwal: What do you observe in all these examples? Alka?

Alka: The things lighter than air always move in upward direction.

Mrs. Neer Kanwal: Good, you are right. Children, now you should give some examples.

You must have noticed that
the teacher first gave examples which were relevant to the rule and then she came to the conclusion. This is known as inductive approach.

Bear in mind that these examples should be simple, relevant to the rule or concept and interesting.

Or you can adopt another approach also. You can first state the rule or concept and then give examples to illustrate and clarify that rule or concept. This is known as deductive approach. Let us hear another instructional lesson to have more clarity.

Here is Miss Tripta teaching to IX class. She wants to illustrate that there are always water vapours in the air.

Miss Tripta:- Children, we say that air always contains some water vapour, so that there is always some humidity
or moisture in the air.
Now let us prove it through examples.

Os Notice that the teacher has stated the idea.

Miss Triptai— You must have found some dew drops on the leaves of plants early in the morning in the winter season. From where do these drops come? Rajinder?
Rajinderi— Because of low temperature the moisture in the cool air condenses and falls on the earth in the shape of dew.

Miss Triptai— If you put some ice in a glass, what will you see on the outer surface of the glass after sometime? Sita?
Sita — There will be water drops on it.
Miss Tripta- The ice in the glass lowers the temperature of the glass and as the air holding water vapour comes in contact with the cooler glass, the vapour condenses and forms water drops on the outside of the glass.

Miss Tripta- Similarly, in the winter season it becomes very difficult to see objects, even objects which are not very far off, due to fog. Fog is also the result of condensation of water vapour on dust particles.

C: You have just heard an instructional lesson using deductive approach. You have noticed that in the inductive approach the teacher gives examples and then infers. But in this approach the teacher cannot verify whether or
not the pupils have understood the rule or concept. On this point the deductive approach helps him. In this approach he gives a number of examples after stating the rule or concept. So you should combine the two and use inducto-deductive approach for clarifying the concept or rule.

To know how this approach can be used let us hear another microlesson in which the inducto-deductive approach is used by Mrs. Neer Kanwal. She wants to teach about the force of gravity.

Mrs. Neer Kanwal :- I am letting go this piece of chalk. What happens to it? Sunita?
Sunita :- It falls down.
Mrs. Neer Kanwal :- When you kick a foot-ball high in the air where does it go? Rajinder?
Rajinder: It falls back to the ground.
Mrs. Neer Kanwal :- If you let go a pencil, or a coin, or such other articles, in which direction do they move? Meena?

Meena :- All these articles will fall down towards the floor.

Mrs. Neer Kanwal :- What do you observe in all these examples? Rani?

Rani :- Any object that loses support will fall to the ground.

Mrs. Neer Kanwal :- This happens due to the force of the earth which attracts all objects towards it. This is known as the force of gravity of the earth.

Children, give me some examples from your daily life experiences about the 'force of gravity'. Sita, will you give us some example?

Sita :- Madam, fruit falls to the ground from the tree.
Rajinder:- Rocks on high mountains get loose and roll down to the plains.

Mrs. Neer Kanwal :- Very good, Meena?
Meena :- Rain drops fall to the ground from the sky.
Rani :- When the flying kite is cut from the thread it falls down.

Mrs. Neer Kanwal :- Very good. You have understood the idea of force of gravity. It is due to this force that objects of various sizes, shapes and states fall from high to low places on the earth.

Q: You have just heard a microlesson using the inductive-deductive approach. You must have noticed that at first the teacher has given the examples and the idea was inferred
and then she has verified the understanding of the pupils regarding the idea.

I think you are now clear about the use of inducto-deductive approach.

This concludes instructional lesson three. Many teachers find that they must replay the instructional lesson in order to learn more about the skill so that they can apply it in their microteaching session.

For assessing your understanding there are five questions. Your answers will help you decide whether you should replay the instructional lesson or not.

1. What are the five components of illustrating with examples?
   (Pause)

2. When can we say that the examples are simple?
   (Pause)
3. When does a teacher use non-verbal media for illustrating?

(Pause)

4. What is the difference between inductive and deductive approach?

(Pause)

5. Why should a teacher use inductive-deductive approach?

(Pause)

If you are doubtful about your answers to any of these questions you replay the lesson later on and check your answers. You will find the answers of all these five questions in the instructional lesson.

You are now ready to hear model lesson three. It will show you the techniques of illustrating with examples.
within the context of a classroom discussion.

Now let us hear a model lesson. The teacher is teaching the concept of unity in diversity in India.

Mrs. Neer Kanwal :- To which State do you belong?

Rani :- Panjab.

Mrs. Neer Kanwal :- Which language do the people speak in Panjab?

Rani :- They speak Panjabi.

Mrs. Neer Kanwal :- Which language do the people of Bengal speak? Rajinder?

Rajinder :- They speak Bengali.

Mrs. Neer Kanwal :- Will you tell me the names of some other languages which are spoken in different parts of India Sita?

Sita :- Hindi, English, Tamil, Telugu, Sindhi, Gujrati etc.

Mrs. Neer Kanwal :- Similarly, the dresses of the people of different areas are different. Tell me
the names of different dresses worn by people in different parts of India? Meena?

Meena :- Madam, in Punjab the girls wear Salwar Kamiz, in Madras they wear sari and in Rajasthan the girls wear Ghagra Choli etc.

Mrs. Neer Kanwal :- Which is the favourite meal of yours?

Meena :- Dal Chapati.

Mrs. Neer Kanwal :- What do Bengalies eat? Sunita?

Sunita :- They eat rice and fish.

Mrs. Neer Kanwal :- Do you like eating Dosa? Rajinder?

Rajinder :- Yes, Madam.

Mrs. Neer Kanwal :- In which State is Dosa the favourite meal of the people?

Rajinder :- In Tamil Nadu.

Mrs. Neer Kanwal :- To which religion do you belong, Ranjana?

Ranjana :- Hindu religion.

Mrs. Neer Kanwal :- How many religions are there in India?

Ranjana :- There are many religions in India, such as Sikh religion, Hindu religion, Christian religion, Islam Dharm etc.
Mrs. Meer
Kanwal :- If any of your class-fellows, who does not belong to your religion, is suffering will you help her?

Ranjana :- Why not, Madam, I shall help her in every possible way.

Mrs. Meer
Kanwal :- If the people of Bihar are suffering from floods what help would you give them? Sita?

Sita :- We can send food and clothes for them.

Mrs. Meer
Kanwal :- Why do you help those people who are not of your religion, caste and province?

Sita :- Because we are all Indians and we are brothers and sisters.

Mrs. Meer
Kanwal :- Yes, that's right. As you know, people in different parts of India eat different kinds of food, wear different dresses, speak different languages, yet they are all one - the Indians. All the aspects i.e. food, clothes and language show diversity among the people in different States of India. But emotionally
they are tied up with common interests and aspirations. They are proud of their rich cultural heritage, customs, traditions and historical background. When there is any external aggression, it is faced by all Indians unitedly. This is clear from the Chinese aggression of 1962 and Pakistani aggression of 1965 and 1971. It shows unity in diversity in India.

Well students, now you give me more example which show unity in diversity.

Rajinder :- We feel grieved whenever there is mishappenning in any part of India.

Sita :- We try our best to help the suffering people in any State of India.

Sunita :- We help our nation materially in war time.

Ranjana :- Madam, we send clothes and food to those people who are suffering from famine.

Meena :- We help the people of border areas in the days of external aggression though we do not know them.

Mrs. Neer Kanwal :- So we can say that there is unity in diversity in India.
You have just heard the model lesson three. Now you practise the skill, tape your lessons and evaluate them on the observation schedules meant for the skill of illustrating with examples.

Now I shall explain how these observation schedules are to be used. In the first observation schedule there are eight columns related to the various components of the skill of illustrating with examples. In the first column of these eight you will write the serial number of examples used. Indicate by a tick mark (✓) against each example whether it is simple, relevant, interesting, presented through appropriate media, and whether it involves any pupil participation. In the
column headed 'Approach'
write 'I' if the inductive approach is used and 'D' if the deductive approach is used.
Indicate the place where the concept or rule is arrived at by writing 'R' in the same column. And in the end give ratings on the seven point scale for the sufficient number of examples.

The second observation schedule for the skill of illustrating with examples is meant to ascertain the extent to which the student-teacher uses the skill. Judgements have to be given on a seven point scale for various aspects of the skill by crossing the appropriate number. The scale value '0' indicates that the student-teacher did not use the concerned aspect of the skill at
all and the scale value '6' means that the pupil-teacher practised the skill aspect very much. Keeping these two extremes in view examine carefully your behaviour related to the given aspects of the skill and cross the appropriate scale value ranging from zero to six against each aspect of the skill given in the schedule.

In this way you can judge your own progress and can make improvements accordingly.

THANK YOU