APPENDIX C

From:

The Principal
Shreyas Vidyalaya
Manjalpur.

Date:

Dear _____,

You know that you have been lucky enough to undergo a very specially prepared course on science when you were in VIII A. The course was prepared in a scientific way by the two research scholars, Mr. Ravindranath and Miss Vardhini whom you have known so well by now. Also, let me tell you that you are the first group to learn science this way. We have, however, a feeling that there is scope for further improvement of this material. This is being done by the research scholars themselves currently. You can also be of help to them in the task of revising this as you have the first-hand experience with the material. You know where exactly the material needs improvement. Of course, you have studied the various topics in science in different ways. You might have some difficulty in remembering all the experiences you had. To help you in this regard, the questionnaire accompanying this letter provides you an opportunity to recall these experiences. Soon after you recall the experiences, you may read the questions provided there and give your reactions in the space provided beneath each question. Your free and frank reactions would be valuable in improving the material. You may respond in any language of your choice. When you finish giving reactions, you may hand-over the completed questionnaire to the school office at your earliest. When the research scholars report to me that your completed questionnaire has been received, I shall be happy.

With good wishes,

Sd/-

(PRINCIPAL)

2 Your Reactions Towards the Strategy and its Components

Note: The various methods through which you learnt the topics in Biology are given below. You may refer the learning material wherever necessary.

Introduction by the Teacher

1. Ewery unit began with a written introduction stating which points would be discussed in that unit. Usually, these points were stated as questions. Do you think these helped you in any way?

   If yes, how and in what manner?

2. In tne introduction, it was also mentioned as to how you will be studying the unit. In what ways has this helped you?

3. Unlike the written introduction, sometimes, the introduction to a unit was told by the teacher before the lesson began. Which of these did you like and why?

4. Introduction to a unit was based on what you studied in the earlier unit. How does this linking help you?

3 Programmed Learning Material and Deviated PLM

Programmed Learning

Most of the time you studied on your own with very little assistance from the teachers. To help you study on your own the material was prepared in a special way. You might recall that the information was given to you in the form of frames. A few other points you might have noticed while going through this material are:

(i) Some frames allowed you to choose from 2 or 3 alternative answers. Depending on the choice you made, you were directed to certain other frames.

(ii) In almost every frame, you were provided with prompts. For example, in some frames, the particular word which would be the correct answer might have been underlined, sometimes, one or two alphabets might have been given in the blank which would help you write the correct answer, or sometimes the information in the frame would hint you the right answer.

(iii) Towards the end of the series of frames relating to a particular point, a whole set of sentences were given with blank provided where you were requested to fill the missing words. These are revision frames because they helped you revise what you had studied.

(iv) The answer to every frame was provided at the left hand corner of the very next frame. This helped you to check whether your answers were right or wrong and proceed accordingly.

Questions:

1. Would you prefer that PLM be used to teach all the unit?

   If yes, why?

   If no, why not? In how many units need it be used?

4

2. Did you feel that frames need not be used in any unit? If so, why?

3. (a) Should prompts be given in the frames? Why?

(b) Should the correct answer be given on the left hand margin of the next frame? Why?

(c) Do you have any suggestion to make regarding where the correct answers to the frames should be given?

4. Did you, at any time copy the correct answers to the frames without studying the information in the frames? Yes/No

If yes, what made you do so?

5. (a) In many frames, you were asked to go to a particular frame depending upon your choice of the alternative. Did you proceed according to this or did you not pay attention to the alternatives?

Give reasons for your answer.

5. (b) Due to these alternatives, many times, you could skip a number of frames and save time. Further, in PLM you would have read a number of frames to learn something. Since alternatives would help skipping these frames, do you think more of such opportunities should be given?

5

6. (a) There were many occasions when you were required to cover about 40 to 50 frames before you came for the next class. How did you react to this?

(b) Sometimes, due to various reasons, you might not have gone through the entire set of frames. Did you ever try to study the topics by reading in-between the whole series of frames?

If yes, could you get an idea of the topic?

(c) You had the experience of sitting at a stretch while going through the frames. How do you react to this?

7. Did you find that learning through frames takes a lot of your time?

If yes, can you suggest some way to present this material in a better way?

Deviated PLM:

Sometimes for e.g., when you studied topics like composition of blood, digestion in animals, respiration in animals, etc., you had a different experience. Here, the information related to an idea was presented through small paragraphs. Soon after these paragraphs, there were a few questions. You had to answer these questions and then check your answers with those given in the material.

Questions:

6

1. In what way did the presentation of ideas along with the diagram help you?

2. Did you think that it is just like going through text-book or classnotes except for the activities and questions?

3. Would you like to have material presented in this form?

   (i) in all the units.

   (ii) in a few units.

4. Did you answer the questions given soon after such presentation? Yes/No

   If no, why not?

5. In what way did the answer given soon after the questions help you?

6. Do you suggest any change regarding where the answers to these questions should be given?

Lecture Method:

In studying topics like circulation of blood in the human heart, food chain etc., your teacher explained the ideas with the help of charts and models, and even with diagrams on the black board.

7 Questions:

1. How did you find the explanation given by the teacher?

2. Do you think you should have been involved to a greater extent?

3. You did not take notes while the teacher explained, which you normally do in other classes. How does this affect your learning with regard to:

   (a) listening in class.

   (b) neighbour looking into your book and disturbing you.

4. What do you have to say regarding the use of charts, models, etc., by the teacher to present certain points?

5. The charts and models were taken away as soon as the lesson was over. The charts and models can be kept in the class or in the laboratory or in some safe place in the school where you may go and observe them leisurely. Will this practice help you in any way? How?

8

I. Team Teaching:

You might recall that you had the experience of listening to two science teachers in the same period. On one occasion, they discussed why at all you study science of in other words, the importance of studying science. The other topic discussed by them was the 'Nitrogen cycle'. While discussing these topics, your teachers at various stages, argued with one another to reach certain conclusions. At the end of the discussion, cyclostyled handouts were supplied.

Questions:

1. The arguments made by two teachers might have confused you or perhaps, the arguments might have helped you to think in different ways and arrive at your own conclusion.

   (a) Which of these happened to you?

2. Instead of two teachers, the arguments could be made by a single teacher.

   (a) Which do you prefer?

   (b) Give reasons for your preference.

3. Do you think that students should participate a great deal in a discussion being carried out on by two teachers on the lession?

   (a) Yes/No

   (b) If yes, why? If no, why not?

4. Do you have any comments on this way of learning?

9

Inquiry Technique:

In studying some units, e.g., factors affecting photosynthesis, transportation and circulation etc., you performed activities in a different way. Most often, you set a hypothesis, or in other words, you guessed the possible way of proceeding with the problem you were given. Next, you wrote down the procedure. Your teacher discussed this with you, as a result of which you arrived at the correct procedure. Finally, you conducted the activity according to the procedure arrived at.

Questions:

1. You experienced two ways of experimentation; one, demonstrations where your teacher showed you experiments and two, inquiry technique where you guessed the way of solving a problem and tested the guess. Which of these two methods do you prefer?

   Why do you prefer the method?

2. In what way did working in groups with your friends help you?

Pupil Activities and Teacher's Demonstration

Pupil Activities:

(a) You might recall that to study certain points, you were asked to perform simple activities before you were supplied the learning material, e,g., in the study about proteins, carbohydrates, digestion in human beings. Of course, you were given instructional material which gave directions as to how you should proceed with the activities.

(b) Sometimes, you were taught certain points given in instructional material on these points, and later asked to conduct activities related to these points, e.g.,activities related to blood and its composition.

10 Questions:

1. Did you conduct all the activities given in the learning material? Yes/No

   If no, what made you not perform these activities?

2. What difficulties did you face in carrying out these activities with regard to the following:

   (a) equipment

   (b) instructions given

   (c) time required

   (d) any other.

3. The activities given to you were sometimes too simple, sometimes really challenging:

   (a) Which kind of activities did you like better?

   (b) Why do you prefer these activities?

4. Sometimes, you may not have performed certain activities. Yet, you might have told the teacher that you have performed the activity.

   If yes, what prompted you to do so?

11 5. Did the pupil activities lead you to perform certain other simple activities?

If yes, which are these activities?

Teacher's Demonstrations:

To teach you certain topics, e.g., in the topic transportation of water in plants, your teacher showed you experiments and discussed the experiment by raising certain questions. You observed these experiments and made your observations on the 'observation sheet'. Once again, at the end of the experiment these observations were discussed.

Questions:

1. In what way did performing the experiments in class by the teacher help you understand the ideas?

2. Would there have been any difference if you learned these ideas with the teacher explaining using the black-board? If any, what differences?

3. In what way did the recording of observation made during the experiment help you?

4. Do you have any suggestions in the conduct of such experiments with regard to:

(a) placing the apparatus.

(b) room wherein they were arranged.

(c) the presence of two teachers.

12

5. Did you feel that you could have been given more opportunities to participate during the experiments?

Discussion Sessions:

(a) In every unit you studied this year on science, discussions on the various points of each unit were held either as the unit went on, or at the end of the unit. During these discussions, you were free to raise questions to clear your doubts regarding the topic, to raise new questions which would help in knowing more about the topic, to react to any point made by your friend or the teacher etc.

Questions:

1. In what way did the discussions in the class help you with regard to the following:

(a) clarifying doubts.

(b) developing confidence in putting forth ideas.

(c) helping you to read more about ideas.

(d) probing you to do simple experiments raised during discussions at home.

2. You might not have participated in the discussions to a great extent. If so, what are the reasons?

13

3. Did you think that when a topic is covered and the discussion is held towards the end of the unit it is a waste of time.

(a) Yes/No

(b) Why?

4. After a discussion in the class, did you discuss the points with your friends while going home, or while coming to school or in school during leisure time?

If yes, what made you discuss?

5. Sometimes, during discussion, your teacher might have asked you questions which you might have not thought about. In what way did such questions help you?

6. Many a time, you might have discussed some points with your teacher individually. How did you feel when these questions were taken up for discussion in the class.

7. Your friends too participated in discussions. In what way did their participation help you?

Audio Visual Presentations:

In studying about certain topics like cell and its organelles, and the process of digestion in animals, etc., your teacher showed you a series of pictures projected on a screen. To understand each picture,

14 you listened to your teacher. Soon after a section was over, your teacher gave a work-book which raised questions on the points presented through projections for which you wrote the answers.

Questions:

1. Did this form of presentation through projections appeal to you?

   (a) Yes/No

   (b) If yes, why?

   If no, why not?

2. In what way did the work-books supplied after a few projections help you?

3. In what way did the handouts describing the projections help you?

4. Instead of using the projections would you prefer that the teacher explains the same using the black-board?

5. Would you like to have more presentation through projections?

Historical Background:

In some sections of the units, stories related to the lives of scientists of their works have been presented, e.g., Dr.Beaumont and discovery of the process of digestion, Van Helmant and photosynthesis, etc. This was provided to you in order that you may see how science develops.

15 Questions:

1. How far did the stories relating to scientists provide you an interesting reading?

2. (a) Many times you studied how a scientific idea develops through the work of different scientists. Did this information help you in any way?

(b) Do you think it would have mattered much if the information on the working of scientists was not given?

3. Did the historical notes make you feel that you should read more about scientists?

4. Did these historical notes make you read more about the scientist, their nature of working etc.? If yes, what else did you read?

5. Would you prefer that more stories relating to the life of scientists and their work be included?

Summaries:

(a) If a unit had several subunits, after you studied each subunit, a summary of that subunit was provided to help you revise the contents of that subunit.

(b) After the entire unit was completed, a summary of all points covered in that unit was given. This was done to help you revise the contents of the entire unit.

16 (c) At various stages of the material you have come across statements in capital letters given under the title "What you studied so far". This gave you in a brief way what you had studied in earlier pages.

Questions:

1. In what way did the summary at the end of each submit help you?

2. In what way did the summary at the end of the entire unit help you?

3. Should the summaries be more detailed?

4. In what way did the underlining of certain words and sentences in the summary help you?

5. In what way did the summaries help you at the time of tests and examinations?

6. Another way in which you were helped to summarise the ideas contained in a few pages was through the matter under the title "What you studied so far".

   (a) Did you make use of this?

   (b) If yes, how did it help you?

17 Criterion Tests and Feedback:

(a) At the close of each unit you took a unit test. Your performance on the test was discussed soon after your test papers were corrected.

(b) If you had strong reasons for not taking the test on the day fixed for it, you were given the opportunity to take the test even later.

Questions:

1. In what way did taking a test at the end of each unit help you?

2. Do you suggest any change in the type of questions that were asked in the tests?

3. How far were these tests useful in helping you prepare for the final examination?

4. In what way did discussions about your performance help you?

5. The test papers were given to you after marking and then were taken back?. Do you think that you should have been allowed to keep the test papers?

6. Sometimes, when you were absent for a particular test, you took the test on some other day. What made you come and take the test voluntarily?

18

Exercises and Assignments:

Exercises:

As you went through the learning material, sometimes soon after you learned a particular point, an exercise on it was given. You could work the exercise and check your answers with those given after the exercise.

Assignments:

After you learned certain topics, assignments on the topic were given. These assignments were discussed in the class.

Questions:

1. Did you work out the exercises which were given in the course of the learning material?

2. Did you check your answers with those given after the exercise?

3. In what way did the exercises help you practice what you studied?

4. In what way did the answers given soon after the exercise help you?

5. Do you suggest any change regarding where the answers to exercises should be given?

19 6. Did the assignments take away much of your time at home?

7. In what way did the discussion of assignments help you?

G E N E R A L

1. Did this method of learning science make you spend long hours with science subject only?

2. Did studying science this year hinder your study of other subjects?

3. Did you find any improvement in your science achievement?

4. Do you find any improvement in your way of looking and thinking about things around you after you underwent this course in science?

Give a few examples in respect of this.

5. If such methods could be planned for other subjects, how would you like?

6. The material was bulky, how would you feel if the same material was printed as a small book?

7. Both teachers taught you certain common topics. Also, physics and chemistry were not separated. Instead you studied these as one subject. In fact, as much as possible we can study science just as one subject called "General Science" instead of separating these subjects. If this was done, what did you think would happen to your learning of ideas in science?

8. After going through the experience did you feel satisfied or did you feel that "after all there was nothing much exciting?

9. If you have anything more to say regarding the experience with the new method of learning science, you may mention here.