UNIT 8 LEARNER-CONTROLLED INSTRUCTION

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8.1 INTRODUCTION

In Unit 7, we discussed some teacher-controlled instructional methods, namely, lecture, demonstration, team teaching and activity-based instruction. In this unit, we shall focus on some of the learner-controlled instructional methods. Learner-controlled instruction, unlike teacher-controlled instruction, gives the student greater importance and role in the teaching-learning activity. It lays stress on individualised learning or self-learning.

Individualised learning requires careful monitoring of students working on their own or in small groups on practice a new skill. Before assigning students to work independently, you, as a teacher, have to provide necessary guidance to ensure that they are prepared to work on their own. Thus, learner-controlled instruction demands your active participation in the teaching-learning process. The students may need periodic review with corrective feedback on their work.

There are various methods of self-learning. Self-learning can be more structured or less structured. In this unit, we discuss programmed instruction, personalised system of instruction and computer-assisted instruction under more structured self-learning methods and the project work under less structured self-learning method.

8.2 OBJECTIVES

After studying this unit, you should be able to:
  • define the concept of learner-controlled instruction;
  • explain the meaning and types of self-learning;
  • differentiate between various styles of programmed instruction;
  • acquire the skills to develop programmed learning material;
  • define the concept and aims of project work;
  • describe the various types of project work; and
  • enumerate the roles of teacher and students in project work.
8.3 LEARNER-CONTROLLED INSTRUCTION (LCI): THE CONCEPT

All of you know that any instructional system comprises the teacher and the learner, besides the curriculum. It is not appropriate to claim that the teacher alone controls the instruction system. Of course, there are certain instructional procedures in which the participation of the teacher is more in comparison to that of the learner. But there also exist other instructional procedures in which the learner plays a pivotal role in the instructional process as compared to the teacher. Hence, the instructional system which is controlled by the teacher is called teacher-controlled instruction which we have already discussed in the previous unit. In that unit, we discussed a few teacher-controlled instructional techniques, namely, lecture, demonstration, team teaching and activity-based instruction. Similarly, instructional system which is more controlled by the learner results in learner-controlled instruction.

In learner controlled instruction, the learner takes up the responsibility for his/her learning. It, however, does not mean that you, as a teacher, have no role to play in learner-controlled instruction. It is a matter of shifting relatively more of the responsibility of learning to the students. When we say that in learner-controlled instruction the students assume the responsibility for his or her learning, we want to draw your attention toward the main attribute of this method. That is the emphasis here is on learning rather than teaching. Your role becomes more of a manager, a facilitator or a guide. Your help is essential throughout the instructional process. Learner-controlled instruction includes a number of techniques which range from the simple assignment to the most sophisticated computer-assisted instruction. All learner-controlled instructional techniques come under the umbrella of self-learning or individualised instruction. In the next section, we discuss the concept and different forms of self-learning.

8.4 SELF-LEARNING

Self-learning or individualised instruction developed when teaching methods meant for all members of a group failed to meet the varying needs of individual students. An underlying assumption in this method of instruction is that human-beings learn many things through their own efforts. Every individual has a natural desire to learn on his/her own. Another assumption is that every individual is unique; he or she learns according to his or her abilities. Hence, any teaching system based on presentation of information to a group cannot take into account the wide variation in the rates at which individual students learn. As the students entering secondary education vary in their abilities, interests and needs, there is a pressing need for a wide range of instructional alternatives which may cater to their individual differences. Individualized instruction is the only panacea for such needs. The most common description of self-learning methods is that teaching is directed towards individual students rather than the group of students. However, self-learning is not synonymous with independent learning or learning in isolation from other students. Self-learning may encourage independence from the teacher; this, however, is not usually the main aim. During self-learning, the students do not necessarily work in isolation from their peers. The main characteristics of self-learning are:

- emphasis on learning rather than teaching
- recognition of individual differences
- active student participation
- working at one’s own pace/self-pacing, and
- provision of feedback and evaluation.

Self-learning as a method of instruction has certain advantages which make it more suited to the students. They are:

- The students learn more effectively when they learn on their own. Self-learning develops critical thinking in handling of study materials on one’s own and enhances communicative skills and self-reliance.
- Self-learning prepares the student to face the problems in his/her real life.
- Learning on one’s own is more enjoyable, exciting and rewarding.
- Self-learning promotes self-discipline in the students.
8.5 FORMS OF SELF-LEARNING

Having discussed the concepts of learner-controlled instruction and self-learning, we shall now proceed on to the forms of self-learning. Self-learning can be of various forms. There are two main categories of self-instruction method: more structured or less structured. In this unit, we shall discuss both the types of self-learning methods. Under more structured methods, programmed learning, personalised system of instruction (PSI), computer-assisted instruction (CAI) are discussed. Considering the inputs required by a teacher at the secondary/secondary school level, project work is presented under less structured methods. First, we take up more structured methods.

8.4.1 Programmed Instruction

Programmed instruction or programmed learning emerged out of the research conducted by B.F. Skinner on operant conditioning (You will study about operant conditioning in detail in course ES-332). Although Skinner’s name is always associated with programmed learning, there were several efforts made earlier by some people in this direction. The Law of Effect propounded by E.L. Thorndike (1874-1949) has direct relevance to programming. According to this law, learning which is associated with satisfaction is likely to be more permanent than learning not accompanied by satisfaction. Satisfaction in the form of reward reinforces the behaviour of the student to take interest in his/her learning. This is an important aspect in programming. In 1926, Sydney L. Pressey devised a teaching machine which required students to press keys to answer multiple-choice questions and the next question was presented only after the correct key had been pressed by the student. The idea behind such a teaching machine was that after being exposed to instruction, the student would go through a test presented by a machine and achieve mastery on all the questions (content) till (s)he ceased making mistakes.

The real landmark in the development of programmed learning was the work of B.F. Skinner. After conducting extensive research on rats and pigeons, Skinner developed a theory of learning called operant conditioning. According to this theory, behaviour is learned only when it is immediately reinforced, that is, when it is followed by some pleasurable event such as food, praise or attention. Therefore, the task of the programmer is to provide contingencies of reinforcement so that the correct responses to the questions presented are immediately rewarded and the incorrect responses are not. Skinner opposed punishment for wrong responses and recommended that punishment should be kept minimum so that there was no danger of developing a negative attitude towards the learning activity. By applying the principles of operant conditioning in teaching human-beings, Skinner developed an instructional model which is popularly known as programmed instruction. The term ‘programmed’ is used for arranging learning experiences or events in the most logical and psychological sequence so that the student gets maximum benefit from instruction. Having explained the origin and the concept of programmed instruction, we now present to you the various styles of programmed instruction.

Styles of programmed instruction: There are mainly two styles of programmed instruction - linear and branching. These styles aim at programming of subject matter and are widely used in instructional situations all over the world. However, there is yet another style which is used for programming of behaviour. This style is called mathetics. In our discussion, we focus on the first two styles.

Linear style: The linear style of programming developed by B.F. Skinner is otherwise known as Skinnerian style. According to this style, the subject matter is broken into small pieces of information (steps) and is presented in a logical sequence of small steps. These small steps are called frames. The student is required to go through frames containing a bit or bits of information and respond to the question given at the end of each frame. The feedback in the form of correct answer is provided in the next frame. The frames are so designed and arranged that students’ errors are kept to a minimum. In other words, programmed instruction ensures that the student makes/commits minimum errors. An example of linear programming is presented through the following frames.

Example of Linear Programming

35. There are two ways of presenting the frames. In one style, the first frame leads to the second, the second to the third and so. This leads to a sequence that resembles a straight line until the whole information is acquired by the student. See the example in the box wherein six frames are sequenced in a linear fashion.
This type of presentation in which frames appear sequentially one after another in a line is called a ..........frame.

(Go to frame 36)

Correct answer: linear

36. In the linear frame, after the information has been provided, there is always a question which may be like 'fill in the blanks' or 'one word answer' to be responded by the student. There is always a blank or a question in a.............frame for the student to respond.

(Go to frame 37)

Correct answer: linear

37. Whether it is a blank or a question, the student has to respond to it. The activity on the part of the student to complete a blank or to answer a question in a linear frame is called a ..........se.

(Go to frame 38)

Correct answer: response

38. As mentioned earlier, this feature of the question and response provides scope for active participation on the part of the students. In the last frame, you participated in the instructional process by writing the word.............

(Go to frame 39)


Branching style : The branching style of programming was developed by Norman, A. Crowder. His intention was to use the errors to direct the students to an appropriate explanation or remedial sequence. Therefore, he gave students some information followed by a multiple-choice question and provided a different response for each apparently correct answer (distractor) chosen. Students proceed through such a programme, following different routes or branches and care is taken to ensure that they understand each point before they proceed to the next. There are many similarities between linear style and branching style. However, branching style is different from the linear style. There are two main differences between the linear style and the branching style of programmed instruction.

- In branching style the student is presented with multiple-choice questions and (s)he has to select the correct response out of the given choices. Then he is routed through branches according to his response.
- This style is based on explanation and reasoning. Therefore, it has been more effective with brighter students.

An example of branching style is presented through the following frames:

Example of Branching Style

39. Examine the frame you are reading at present. Is it an example of a linear frame according to the descriptions given earlier for such frames?
Yes, it is - go to frame 41
No, it is not a linear frame - go to frame 40

Correct answer: Not a linear frame

40. That is right. It is not a linear frame. You had to choose one of the two alternative answers provide to decide your next frame. If you had answered ............. you would not have come to this frame.

(Go to frame 42)

41. No, the last frame was not linear because in a linear frame, there is a blank or question to which the student has to respond and he is invariably taken to the next frame in the sequence. Hence the last
frame was ..............

(Go to frame 40)

Correct answer: yes

42. It was a different type of frame. The pattern was different from a linear frame. In a diagram below. Frame 4 gives two alternatives to the student. It has a provision for branching. See the figure here.

\[
\begin{array}{c}
\rightarrow F4 \rightarrow F6 \rightarrow F7 \\
\rightarrow F5 \\
\end{array}
\]

As there is provision for branching in frame 4, it is known as a ........ frame.

(Go to frame 43)

Correct answer: linear

43. What about the last frame where we brought in the word 'branching'. Was it a branching frame or a linear frame?

Linear - go to frame 44

Branching - go to frame 45

Correct answer: linear

44. That is right, it was not a branching frame. In a branching frame the student is provided with two or more possible responses and he 'branches' off according to the response he chooses.

\[
\begin{array}{c}
F16 \text{ Incorrect answer} \\
F15 \quad F18 \text{ Correct response} \\
F17 \text{ Incorrect response} \\
\end{array}
\]

The student goes to two or more different frames according to the choice in the case of a ........ frame.

(Go to frame 46)

45. No, it was a linear frame. It has all the characteristics of a linear frame namely, a blank space was provided for the student to respond and all the students were invariably taken to the next frame.

As the above mentioned characteristics were satisfied by the said frame; it was a ........ frame.

(Go to frame 44)


Stages for development of programmed learning material: There are three major stages involved in the development of programmed learning material. These are:

- Planning and preparation of the programme.
- Writing of the programme.
- Evaluation of the programme.

Let us discuss each stage in detail so that you acquire the skill of preparing programmed instruction material for your students.

i) Planning and preparation of the programme: This stage involves a few specific activities. These are as follows:

- First, you have to select the topic which is to be programmed. This selection depends on the style of programming to be adopted, the scope of the use of the programme, the field of specialisation of the programme and so on.
- Second, you have to find out the characteristics of the target population, namely, their age, gender, interests, intellectual level, experiences, cultural background, etc.
- Third, you have to undertake task analysis of the topic selected for programming.
- Fourth, you have to specify the instructional objectives in observable and measurable terms.
Fifth, you have to write criterion questions for all the objectives which form part of the pre-and post-tests to be administered when the programme is gone through by the student. It provides a basis for evaluating the effectiveness of the programme.

Last, you have to arrange each step/frame/teaching point in a logical sequence. Each teaching point should contain a new information. Also, you have to look into the type of learning involved within each teaching point. This is important as you have to design the instructional strategy accordingly.

i) Writing the programme: The next important task in programme development is writing the programme. Generally, the teachers prefer either linear or branching style. But, sometimes one does find a combination of both the styles in a programme. So the first decision you have to take is whether you want to follow linear style or branching style or a combination of the both. The second task is to take a decision on frame development. There are mainly four types of frames which find place in a programme. These are:

- Introductory frames – These frames are used to introduce new information/experience.
- Teaching frames – These frames provide new knowledge to the students.
- Practice frames – These frames provide opportunities to the student to practice what he/she has learned from the teaching frames.
- Testing frames – These frames are developed to assess the knowledge gained by the student. The testing feedback will provide information about the level the student has achieved in terms of pre-fixed objectives.

While developing frames you should pay attention to the following principles:

- Prompts or cues, wherever necessary, should be used to help the learners in selection of right answers. The prompts will help the student of commit minimum errors.
- Superfluous or irrelevant material in the programme must be avoided in order to achieve the objectives of the programme.
- Learning material should be presented in a sequence of small learning steps (frames), each step representing a learning point.
- Immediate feedback should be provided after each response to assist the student to know whether or not he/she is on progressing properly.
- The objectives should be spelt out at the beginning of the programme.

ii) Editing the programme: Once the first draft of the programme is ready, you should ensure that the draft is thoroughly edited by the experts. The editing exercise helps in improving the quality of the programme. The benefits of editing are as follows:

- Elimination of ambiguities and inadequacies in the programme.
- Improvement in the logical sequence of the frames.
- Improvement in the technical accuracy of the programme.
- Examination of the appropriate use of maps, charts and illustrations, etc., in the programme.
ii) **Evaluation of the programme:** When the writing of the programme is over, the next task for you is evaluation of the programme. Evaluation of the programme is carried out to assess the efficiency and effectiveness of the programme. This evaluation exercise is done at three stages. There are:

a) **Individual testing:** At this stage, the testing is done on one-to-one basis. This means that you, as the programme designer, and one representative of the target group for whom the programme is meant are involved in the testing activity. At the outset, you should tell the student the purpose of the testing and establish good rapport with him/her. Then you should ask the student to read on the frame and respond to it loudly. When a particular frame is read by the student, you should ask about the difficulties faced by him/her and those difficulties should be discussed with the student. Thus, you will be able to locate the inadequacies in the programme. By doing so you will be able to eliminate those inadequacies.

b) **Small group testing:** After making necessary modifications/improvements in the draft programme on the basis of individual testing, the programme is ready to try out on a small group of students, say 5-6 students. For this activity you have to give necessary instructions and guidance to the students. At the beginning of the programme, students are administered a pre-test and at the completion of the programme, students are administered a post-test. The data collected from the pre-and post-tests are analysed to assess the effectiveness of the programme. Necessary improvements in the programme should be made on the basis of the results of the testing.

c) **Field testing:** This is the last stage of testing the programme. At this time the programme is administered on a large group of the target population. Pre-tests and post-tests are administered prior to starting and after the completion of the programme respectively. The data thus collected from testing are analysed and the programme is modified and made ready for use.

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**Check Your Progress 1**

**Notes:**

1. **Check mark (✔) the right answer in case of questions (i) and (ii), and write the answer to question (iii) in the space given below.**
2. **Compare your answers with those given at the end of the unit.**

**i) Which of the following does not serve the purpose of self-learning method?**

- a) To encourage students to learn on their own.
- b) To make instructional activity more individualised.
- c) To discourage teachers from teaching in class.
- d) To develop in the learner, analytical thinking self-dependence and self-evaluation.

**ii) Which of the following is absent in programmed learning material?**

- a) Individualised instruction
- b) Self-feedback
- c) Classroom teaching
- d) Students' active participation in learning
- e) Small steps

**iii) Describe briefly three major stages for development of programmed learning material?**

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8.5.2 Personalised System of Instruction

The personalised system of instruction (PSI) is another self-learning technique which emphasises individualisation of instruction and learner-controlled instruction. It is also known as Keller Plan and is widely used all over the world. This technique is called PSI because instruction is designed according to the need and ability of the student. Like other individualised instructional methods, PSI also allows the student to move through course material at his/her own pace and requires mastery learning by him/her.

Features of PSI: Keller (1968) identified five main features which distinguish PSI from conventional methods of instruction. These are:

- PSI is a mastery oriented learning technique.
- It is individually paced technique of teaching-learning.
- It uses a few lectures to stimulate and motivate the students.
- It uses printed study guides to communicate information.
- It uses tutors (or a teacher like you) to evaluate attainment of the objectives by the student.

Description of the technique: In PSI, the student is given carefully prepared assignments which generally include programmed learning material, handouts and materials which are available in the library or at the learning resource centres. The materials include questions and exercises. The student is told about the nature of assignments. The student is also instructed about how to read and what to read. At a time, the student is expected to work on one unit only. The tutors (not necessarily professional teachers) ensure that the student is provided with proper reading material, remedial material and necessary help whenever he faces any difficulty. When a student thinks that he/she has completed the material, he/she can come to you. You can conduct a short quiz or test in order to evaluate the student’s mastery over the material. If you are not satisfied with the performance of the student, you should ask the student to re-study the course material. If you are satisfied, you should direct the student to proceed on to the next unit.

As an instructional technique, PSI has proved to be a better technique in comparison to conventional teaching. Research evidence shows that PSI facilitates better performance, increases retention and promotes transfer of training.

8.5.3 Computer-assisted Instruction

One of the most important contributions of modern technology in the field of individualised instruction is the introduction of computers in the teaching-learning process. Although, its use has not yet been extended on a mass scale to our schools, the future years may witness fast computerisation of the teaching-learning activities. As teachers, we should know the role of computers in the teaching-learning process. A computer can record, analyse and react to students’ responses. It can store and manipulate information on an extensive scale; it can control and manage a wide variety of learning materials; and it can simultaneously cope with learning requirements of many individuals. It can make a number of planning decisions also.

Before we discuss computer-assisted instruction, let us understand technical description of a computer in brief. A computer is an electronic device that accepts data, performs operations on that data in a sequence (decided by the programme) and provides output in terms of results. Computers can be of various sizes and they are named differently, like mainframe computers, mini-computers and micro-computers. Apart from size, computers are differentiated according to the specifications of the electronic devices. These include the amount and type of storage capacity, the capabilities of the central processing unit (CPU), and the type and nature of the peripheral equipment (such as disc storage, etc.) that can be connected to the computer.

The basic micro-computer system is shown in Figure 8.1. It consists of an input device (e.g. the keyboard), the central processing unit of the computer and storage devices (e.g. cassette tape player, floppy disc device), and the output device (e.g. a TV display unit or a monitor and/or printing terminals). The actual computer equipment is called 'hardware', while the term 'software' refers to the instructions, courses or the programmes that the computer carries out.

The input device, usually a keyboard, (or a cassette recorder or a disc device), is meant to feed data and instructions to the CPU. The control unit in the CPU receives instructions involving
calculation or comparison. It then controls the movement of data from the memory of CPU for arithmetic or logical operations. Once these operations are over, it moves the results to a specified storage location and/or to the output device. Normally, a TV screen displays the outputs that computer has processed. A printer can also be used if a hard copy is required.

Computer-assisted instruction: Computer-assisted instruction (CAI) is, in a sense, an extension of programmed learning material and the personalised system of instruction. In CAI, there is flow of information and interaction between the computer and the student. The computer provides instruction directly to the student and allows him/her to interact with it through the lessons programmed in the system. The student puts questions to the computer and feeds answers into it with the help of the keyboard. The computer provides feedback to the student on the basis of his/her performance. On the whole it may be said that the computer acts as a teacher to the student.

In order to carry out this teaching/learning function, the computer utilises various instructional modes. Let us discuss these modes in brief.

i) Drill and practice: In this mode, the computer presents to the student a series of exercises which he or she attempts by giving some responses. It provides the student feedback on his/her answers in the form of congratulatory message, if it is right, or a corrective comment, if it is wrong. Thus, computer-assisted instruction provides endless drill and practice with repetition at a pace that can be controlled by the student. The computer allows the students to proceed further only when mastery has been achieved by him/her.

ii) Tutorial mode: In the tutorial mode, as in programmed instruction, information is presented in small steps followed by a question. The student's response is analysed by the computer and appropriate feedback is given.

iii) Simulation mode: Learning experiences related to the real life phenomena are provided to the student through this mode. For example, the study of genetics, experiments in town planning, the operation of a system, etc., can be shown to the student through the computer simulation.

iv) Discovery mode: This mode uses inductive approach to learning wherein the problems are presented and the student solves them through trial and error.

v) Gaming mode: In gaming mode teaching can be imparted through a playway mode.

Computer-managed instruction: Computer-managed instruction (CMI) is another contribution of the computer to the domain of instruction. In CMI, the computer gathers, stores and manages information to guide the student through individualised learning experiences. The computer helps the student move through check-points (in the form of definite activities) in the education process at different times via different paths matching the individual capabilities. CMI achieves this individualised instructional process by a series of activities administering diagnostic tests, scoring them, prescribing the appropriate paths and monitoring the progress of individuals all along the route.
Check Your Progress 2

Notes:

a) Tick mark (✓) the right answer.

b) Compare your answers with those given at the end of the unit.

i) State what is not usually used as a method of instruction in PSI.
   a) Lecture
   b) Programmed text
   c) Audio-visual modules
   d) Tutor aids

ii) Which of the following purposes is served by CAI?
   a) Teachers get rid of teaching.
   b) Students get individualised instruction.
   c) Colleges and universities need not appoint teachers.

iii) Match the types of learning provided in Column A with the modes of CAI in Column B. Each mode of CAI can be used more than once or not at all.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
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<tbody>
<tr>
<td>(Types of learning provided)</td>
<td>(Modes of CAI)</td>
</tr>
<tr>
<td>a) Inductive approach to learning</td>
<td>i) Tutorial</td>
</tr>
<tr>
<td>b) Real life systems being learnt</td>
<td>ii) Drill and practice</td>
</tr>
<tr>
<td>c) Learning presented by PLM style</td>
<td>iii) Simulation</td>
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<tr>
<td>d) Mastery learning</td>
<td>iv) Gaming</td>
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<tr>
<td>e) Learning through recreation</td>
<td>v) Discovery</td>
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<tr>
<td>f) Learning controlled by the learner</td>
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</tbody>
</table>

8.6 PROJECT WORK

Project work, as a self-learning method, is less structured as compared to PLM, PSI and CAI. It is also called "project method". In schools, you may be giving assignments of various kinds to your students. Sometimes, certain assignments demand that students work on them for a longer period, say one week or two weeks, and produce something concrete or describe the process of certain experiences in the form of a report. Such assignments are called project work or project method. The dictionary meaning of the project is a scheme or design. Through project works students get experiential learning. This provides the students an opportunity to learn at their own pace and time, while they do certain activities more or less independent of the teacher. A project is an enquiry, conducted personally by a student who is expected to use a variety of methods (e.g. analysis, interpretation, planning, etc.) to undertake a task or study a subject (in terms of knowledge, skill or attitude) and to write a report, or design and make a product, or organise an activity, or solve a problem, etc., in line with the objectives of the project. Thus, project work helps students plan, observe, analyse and synthesise. It tends to develop self-learning habits in the students. It provides real-life experiences to them. It aims at problem solving by them.

8.6.1 Aims of Project Work

The aims of the project work can broadly be classified into the following categories:

- Knowledge
- Skills
- Personality attributes

Let us elaborate each category for better understanding.

Knowledge: Project work helps the learner develop knowledge of the topic and learn the various techniques used in the area of study.

Skills: Project work develops the following skills in the students:

- Skills for independent work which includes planning one's work, hunting for sources,
collecting data, selecting relevant materials, fabricating experiments, manipulating instructions, making keen observations, analysing results, synthesising findings, making generalisation and presenting findings for use and necessary action.

- Skills for group work include working in a group, developing the ability to cooperate with others, developing fellow feeling and democratic spirit.
- Skills for communication include development of oral skills by argument and discussion with colleagues and supervisor (teacher in our case).

Personality attributes: Project work also develops personality attributes which may be higher mental abilities such as critical thinking, creative thinking, evaluative ability, analytical thinking, etc., and certain affective attributes like interest in the area of study, social sensitivity, etc.

8.6.2 Types of Project Work

Project work may be of different kinds. In school context, it may broadly be classified as laboratory work, field work, and library work.

i) Laboratory work: Laboratory work aims at developing certain skills in the student through activities conducted in controlled conditions. Such project work is carried out in science and science-related subjects. The students are required to undertake mini research projects, for example, carrying out small laboratory experiments, like preparation of oxygen, dissection of a frog, etc. Laboratory work involves skills of manipulation, organisation, experimentation and interpretation. Through lab work, students get real-life experiences, of course, in controlled conditions. The students get the opportunity to apply theoretical knowledge into practice.

ii) Field work: Unlike laboratory work, field work is conducted in real-life conditions, and not under controlled conditions. The students are expected to go to the real-life situations where they observe a phenomenon, collect the relevant data, process and analyse the data and arrive at conclusions. Field work is appropriate for both the physical and the social science subjects. Community projects also come under field work. Students may be motivated to take up field work to gain first-hand knowledge of the subject. Organising a literacy campaign in the community, visiting a nearby factory, visiting to a nearby slum, etc., are some examples of field work.

iii) Library work: Sometimes students may be asked to undertake project work related to library studies. Such a project has potential to promote individualised learning. Though the students are not habituated to library work in schools, you can encourage them for it by assigning library projects. Library projects may be conducted in two ways:

a) After introducing the topic and providing necessary information to the student in the class, you may tell them about the relevant books which concern the topic selected for the project work. Students should go through those books and develop a report on their work.

b) Another way of conducting library projects is first to ask the students to read the relevant books on the topic and then ask them to come with small reports on the basis of which you can hold discussions with them.

Thus library project can develop the habit of self-study among the students.

8.6.3 How to Organise Project Work?

Project work is an effective instructional method which requires participation of both the teacher and the students. Your role in project work as a teacher is very important because students at the secondary school level may not be competent enough to undertake project work on their own. With your initiative and direction the students can be fruitfully engaged in the project work. Let us discuss what is expected of you as a teacher while organising project work.

Preparation for project work: When preparing for the project work, you should help the student perform the following tasks:

- Selection of appropriate subjects/skills/procedures/problems/topics for the projects.
- Offering students a choice of subject/skill/procedure/problem/topic (if feasible).
- Formulating or rather helping to formulate clear objectives of the project.
- Listing the resources and guiding how to locate and use those resources.
Learner-Controlled Instruction

- Sequencing the work efficiently.
- Timetabling the project realistically.
- Organising an adequate record system.
- Organising and explaining the assessment schedule.
- Formulation of evaluation criteria.
- Outlining evaluation procedures.

With the preparation of the above tasks, you should be able to set the stage for implementation of the project. At the implementation stage also, you are expected to perform a number of tasks.

Tasks at the implementation stage: The tasks performed by you during the implementation of the project are as follows:

- Organising a preliminary briefing session for the students.
- Forming groups for group projects.
- Helping every student select a topic/subject for the project.
- Assisting every student to plan the project by checking the plan outline, eliminating weaknesses, correcting work sequences, suggesting optimal use of resources, checking feasibility of the timetable, suggesting appropriate sources of information, etc.

Table 8.1: Evaluation Scheme for Project Work

<table>
<thead>
<tr>
<th>Stage of Project</th>
<th>Rating</th>
<th>Marks Awarded</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
<td>VG</td>
<td>G</td>
</tr>
<tr>
<td>Planning</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1. Selection of problem</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Formulation of objectives</td>
<td>5</td>
<td></td>
<td></td>
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<tr>
<td>3. Task analysis</td>
<td>5</td>
<td></td>
<td></td>
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<tr>
<td>4. Strategy/Plan</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Sequence</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Methods</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation</td>
<td>35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Information</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Project methodology</td>
<td>5</td>
<td></td>
<td></td>
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<tr>
<td>9. Use of equipment/material</td>
<td>5</td>
<td></td>
<td></td>
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<tr>
<td>10. Organisation</td>
<td>5</td>
<td></td>
<td></td>
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<tr>
<td>11. Application</td>
<td>5</td>
<td></td>
<td></td>
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<tr>
<td>12. Analysis</td>
<td>5</td>
<td></td>
<td></td>
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<tr>
<td>13. Synthesis</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reporting</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Interpretation</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Evaluation</td>
<td>5</td>
<td></td>
<td></td>
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<tr>
<td>16. Conclusion</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Project report or product</td>
<td>30</td>
<td></td>
<td></td>
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<tr>
<td>18. Presentation</td>
<td>5</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>115</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

E = Excellent 5 Marks
VG = Very Good 4 Marks
G = Good 3 Marks
S = Satisfactory 2 Marks
FS = Fairly satisfactory 1 Mark
U = Unsatisfactory 0 Mark

Grand % Total Mark
• Checking every student's progress regularly.
• Suggesting modifications to plans when necessary.
• Encouraging and assisting individual student frequently.
• Checking student's evaluation procedures.
• Assessing the project in accordance with the planned scheme.
• Evaluating the whole project with other students including the project report, project product or procedure.
• Organising an effective group debriefing session.
• Evaluating the efficiency and effectiveness of the project as a learning activity.

8.6.4 Evaluation of Project Work
Evaluation of project work involves both the processes and the product of the project. The product of the project may be some concrete material or the project report. A scheme for evaluation of the project work is presented in Table 8.1.

8.6.5 Role of a Student in Project Work
The student has to play an important role in project work. Though you are there to help him throughout, the main responsibility of carrying out the project work lies with the student. There are three major stages the student has to work through while carrying out project work. These are:

i) **Planning stage**: At the planning stage, the student has to consider the following tasks:
• The student should have a clear idea of the objectives and the criteria of the project.
• If there is any ambiguity, he should seek your help.
• He should understand the scope and limitations of the project.
• He should carry out a task analysis of the project in terms of skill(s), problem(s) or procedure(s).
• He should design a suitable plan, strategy or method for dealing with the project.
• He should arrange the tasks in a sequence and fix a target date to complete the project.
• He should discuss with you various aspects of planning.

ii) **Implementation stage**: At the implementation stage the student should carry out the following tasks at this stage:
• Collect all necessary information.
• Decide about suitable methods of enquiry.
• Use resources such as equipment, materials, available expertise, etc., effectively.
• Cooperate with other students in case of group project.
• Carry out the processes involved in the project, namely, analysis, synthesis, application, decision making, problem solving, etc.
• Stick to time schedule prescribed for the project.
• Secure help and guidance from the teacher throughout the implementation stage.

iii) **Reporting/presentation stage**: The student is expected to carry out the following tasks at the reporting stage:
• Interpret information and use materials properly.
• Draw appropriate conclusions.
• Compile an effective project report.
• Present the report, product, procedure, decision or solution effectively.
Check Your Progress 3

Notes:  
a) Write your answers in the space given below.
b) Compare your answers with those given at the end of the unit.

i) Mention three important aims of project work.

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ii) What are the major types of project work done in schools?

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8.7 LET US SUM UP

In this unit, our main focus was on learner-controlled instruction and self-learning. In learner-controlled instruction, the instructional activity is controlled more by the students than the teacher. In other words, the student depends more on himself for learning than on the teacher. Hence, instructional activity is called individualised instruction or self-learning. There are various forms of self-learning, such as programmed instruction, personalised system of instruction and computer-assisted instruction. Apart from these, the student can learn by himself through relevant project work which provides him experiential learning. In this unit we have discussed how to organise and evaluate project work. To conclude, it may be said, this unit provides you an overview of methods/techniques through which you can develop the habit of self-learning among your students.

8.8 UNIT-END EXERCISES

1. Choose a topic of your interest from the subject area you are teaching in the school. Develop programmed learning material of about 50 frames on it using linear style. Evaluate the material in terms of students' learning and students' reactions.

2. Select a few projects from the subject area you are teaching in the School. Organise these projects with your students. Evaluate the performance of your students in these projects.

8.9 ANSWERS TO CHECK YOUR PROGRESS

1)  
   i) C  
   ii) C  
   iii) The three major stages for development of programmed learning material are:  
      a) Planning and preparation of the programme.  
      b) Writing the programme.  
      c) Editing the programme.
### Instructional System

2) i) A
   ii) B
   iii) Col. A | Col. B
            a) v) 
            b) iii)
            c) i) 
            d) ii) 
            e) iv)
            f) i) 

3) i) Three important aims of project work are the following:
   a) It helps in experiential learning.
   b) It develops in the learner the spirit of research.
   c) It promotes self-learning among students.

ii) Project work conducted in a school may be broadly classified into three categories:
    These are laboratory work, field work and library work.

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### 8.10 SUGGESTED READINGS


