P R O L O G U E

The classroom is a dynamic entity of the three components namely, the teacher, the taught, and the lesson or content. The bipolar and the tripolar philosophies of education emphasised the role of the student, and even advocated that the student should be the nucleus of this educational endeavour but failed to show the specific ways by which this can be achieved. The real difficulty seems to be the failure on the part of the teacher to integrate and coordinate the three components in such a way that the students become active participants and begin responding freely rather than remain mere passive listeners. The teacher's failure to achieve this has resulted in virtually equating learning with listening and teaching with talking. The main defect of this talking-listening system is that it results in accusing each other for their failures, and thus forgetting the need for self-evaluation and remedial actions.

Students, on one hand, are ignorant about the concept of the lesson and they aré also ignorant of their own ignorance, that is, they have no knowledge of results; teachers on the other hand, are still resistant to accept the fact that "the child today is no longer coming to school to be informed... but to be transformed." (Beniskos, 1971). The main implication of this is that the teacher should have, first of all, been transformed himself, and, secondly, should

have the patience and knowledge to transform the child.

Education can never become a single handed affair. It should involve the action, reaction and the interaction of the three above mentioned components, thus allowing the child to share the experience. Then only can education become a process which can be observed, evaluated and improved.

In a classroom a teacher is confronted with a variety of situations. The process of learning is vitally affected by these situations because they affect the learners. In a classroom, for example, one can think of a situation where there is learning without much teaching and teaching without much learning. With the changing needs of society and with the new psychological and sociological knowledge available, it has been recognised that if proper steps are not taken education will lag behind. This realization has brought about certain changes like having chalkboards which are glare-free and text books prepared on the principles of psychology and so on. Also, there are work-shops, seminars and summer institutes for teachers in order to make them more conscious of changes and less resistant to innovations. But the technological and scientific changes are moving at supersonic speed while the educational change has not picked up any recordable momentum. That is why, it is mentioned time and again, that whatever changes are made, "their functions for learners have not changed fundamentally, and instructional procedures have continued to be more or less teacher centered, group oriented,

and text book based" (Dible, 1971). Obviously, the shift should be from the teacher to the student, from the group to the individual and from the text book reading to the student participation. In short, any change should not be a change for its own sake, but should be a change in the roles and responsibilities of the teacher and the student.

In spite of certain changes in the present methods of teaching, it is seen that the student is not actively taking part in the process of learning. One cannot give an immediate answer to the question why students do not participate in the learning process. Perhaps, it may be due to the fact that they are provided with meager opportunities and not guided properly. There are studies indicating that neither the creative students are encouraged nor the dull students are helped by the teacher. Students are given the passive role of listeners and the class continues with a talk by the teacher with questions like "Have you understood?".

Observing the superficial behaviour of the student does not help the teacher to know whether he has 'understood'. As Gilbert (1962 a) observes, "student listens (or reads) and nods with every evidence of understanding. He is able to repeat the theory when we question him". Gilbert demands that we should ask the student to perform specific activities in order to prove that he has learnt. This would most often show that the student had missed the entire point of the subject-matter that we were trying to teach him, even though

he pretended to have complete understanding.

When the student does not actively participate, it results in widening the gap between the student and the teacher. This has several repercussions. The students' participation is very much limited and what they do sometimes goes unrecognised and mostly unrewarded. The dynamics of the classroom though may have the special attractions of providing the spirit of cooperation and competition, it has one grave disadvantage of inhibiting the shy and the backward student"... Students fall behind merely because they are inhibited. They don't like to ask questions in front of the rest of the class. This inevitably leads to a high drop out rate when the student becomes discouraged." (Mikula, 1970).

In order to helping the shy and the backward student, the teacher may have to adopt methods other than lecturing or asking questions. This may be achieved by arranging group discussions and tutorials. Both Bloom (1953) and Axelrod (1948) in their discussions about quality of group tutorials mention that the quality can be enhanced by making the discussions problem-centred rather than competitive, and that the teacher-in-charge of the tutorial acting as mentors rather than judges. The implications of these two aspects namely making the tutorials problem-centred and teachers acting as mentors are self-evident. Once the problem becomes the 'nucleus' of the learning process, the child gets aware of the aims of his study and the processes and steps therein involved. This creates a need of providing

stimuli and demanding responses on an individual basis according to the perceptions, needs and early knowledge of the individual, rather than turning the class into a group of few participating and many withdrawing students. Again this problem-centeredness is the source of motivation in two ways: the first being creating curiosity in the child to see the steps needed to solve the problem, and the second being encouraging him every time the substep gets understood or solved properly. Thus, the motivation or any other positive result lost by making the class less competitive is more than balanced by making the discussions problem-centered and individual-based. Similarly, the teacher's role as a mentor rather than as a judge makes the class more democratic, creates self-confidence in the students by making them respond, and thus creates a feeling among them that the students and not the teachers are the persons to take the major role in learning. Bloom (1953) observes that contrary to the firm beliefs and ambitions held by the teachers, they themselves monopolize discussion time and give hardly any chances for the students to participate, thus forgetting or ignoring the proposition that students are the decision-makers and problems solvers.

With larger classrooms there is a limitation coming in the way of tutorials and discussions. A larger classroom may never be homogeneous. Each student brings with him his unique personality traits and economic, social or

cultural background. These differences reflect in his behaviour. Thus, individuals differ rather than agree, on many significant aspects. But these individual differences are not attended to. All the students of a classroom, whether fast learners or slow learners, are given the same material and time, taught in the same way and tested in the same way. Often we try to teach a group of students at the same rate. In short, it is group pacing rather than individual pacing. But it is to be realized that "there is no evidence that a slow student is necessarily unintelligent" (Skinner, 1961).

There arise some situations wherein a student is considered to be unintelligent, perhaps like the situation in which the teacher expects a response which is not taught. This situation may be like this: suppose a student has been led to respond correctly to the question 'Who was the father of Akbar?' In psychological terms, we can say that in the presence of the stimulus 'father of Akbar' the student responds "Humayun". But just because the student knows this fact, it doesn't mean that we can expect him to respond correctly to the related but not identical question 'Whose father was Humayun?' - the student has not necessarily learnt the answer to this question. This failure to distinguish the two connected but not identical situations/ stimuli results in incomplete and superficial learning. So the teacher should provide proper stimuli in order to bring forth the relations, associations and discriminations.

The teacher fails to appreciate that such situations (Who was the father of Akbar? and - Whose father was Humayun?) are different and feels that it is unnecessary to make the child learn both. That is why immediately he uses the familiar phrase, 'How many times do I have to tell you....?'.

There are some practices related to the evaluation of students achievements, like the presence of red underlinings in students' answer sheets. When a student has given a wrong answer, the teacher puts a cross and leaves it there. When a student makes a spelling mistake, he underlines it and that is all. Not only should the student's error be brought to his attention (which he is doing by crossing or underlining) but also he should know the correct answer so that he will be right in the next time. If a student writes "quarel" on a test and his paper comes back with a red circle around that mistake, he may not know his mistake and the correct spelling.

Burns (1967) listed the following five basic ~~basic~~ principles that guide the conceptualization and developmental process.

1 Learning is change in behaviour.

2 Behavioural changes resulting from learning are observable and measurable.

3 Learning is an individual process.

4 Learning is varied. Research into how learners learn has failed to produce a best or universal method.

5 Everyone can learn.

Unfortunately the existing classrooms are different from what Burns wants them to be. We often come across teachers saying, "Ram would never improve".

Exactly true is the situation wherein the tired teacher would wash away his responsibility by saying " ... no Gopal ! You can never learn ..." (disregarding Burns' optimism that "everyone can learn").

Still pathetic is our method of teaching wherein forgetting the individuality of the child, we teach in classes containing fast learning Ram, slow learning Shyam, and 'never learning' Gopal, as the teacher puts it. Burns may think that 'learning is an individual process' but the teacher wants to teach all the forty-two students at a time, with equal speed.

The teacher simply does not understand 'why Raju cannot still know the spelling of 'quarrel' even after writing the imposition twenty times, whereas Ram can remember well, after writing the same imposition on 'quarrel' !

Unfortunately we do not have rubber stamps like 'learning by imposition' or 'learning by standing on the bench' etc. Burns tries to make the teacher realise this, but the teacher is not prepared to accept Burns' suggestion that 'learning is varied'. Research into how learners learn has failed to produce the best or universal method'. But, the teacher is highly confident that the method of imposition should work with each and every student.

"Ram ! Have you understood?" is mostly a natural terminal of any lesson in the traditional class of any teacher X. Neither the teacher X, nor Ram knows precisely the meaning of the word 'understand'. Besides, neither the teacher tries to test which aspects are clear and which are not, nor does Ram try to make any self-evaluation.

Furthermore, Ram can achieve nothing by 'simply reading' or 'simply listening to'. Learning must involve active thinking, active expression, early correction and active assimilation both on the part of Ram and his teacher.

In a sum, it can be said that the present classroom practices are dominated by passive listening and mass teaching. There are situations wherein a balance is not maintained between the appropriateness of the stimuli and the responses; and there are situations wherein knowledge of results provided is incomplete and late. The recognition of these limitations led to attempts to devise didatic aids; these attempts resulted in the evolving of the techniques of programmed materials. It is not the programmed material that is important, but the principles on which it is based. These principles though recognized long back, could not be implemented to the maximum extent.

Smith (1963) described teaching as a "form of interpersonal influence aimed at changing the behaviour potential of another person". In a classroom we cannot have the 'interpersonal influence' in the real sense of the term as long as the teacher talks and the student listens to,

because this happens to be a one-way communication. But in programmed learning, the programmer prepares the reading material and undertakes the tryout process. In the light of the responses given by the student the programmer rewrites, modifies or changes the sequence or even drops or adds certain things so that the student's line of thought is not broken. Thus the programmer listens to the student, observes the student and learns new things from the student and incorporates them in his programme. Thus, there is sufficient scope for interaction between the student, the programmer, and the content. This kind of two way communication is either absent or meagre in a classroom. This two way communication of programmed learning results in feedback and self-correction.

Programmed techniques are of experimental nature because they undergo the evolutionary process as mentioned above. It is worth mentioning here that programmed techniques test to teach and teach to test rather than teaching and then testing. The virtue of programmed learning is its demand for active participation by the student; the facility of it is its simple, microfined frames; the high light of it is the immediate knowledge of progress it provides and the evidence of its workability is its student testing. The chapter that follows is devoted to describing different forms of programmed learning material used in the present investigation.

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