

DIFFERENT TYPES OF INSTRUCTIONAL STRATEGIES IN TEACHING-LEARNING (T-L) PROCESS

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Abstract: Any teaching-learning (T-L) experience is planned and implemented to develop intended outcomes in the learners. A teacher has to be concerned about how learning can be made more effective and efficient and this is where the different types of instructional methods can be of great help. This paper endeavours to discuss the concept of instructional strategy and its importance in the realm of engineering education.

Keywords: Teacher-centred, Student-centred, Mixed strategy, Deductive strategy, Inductive strategy, Eclectic strategy.

1. INTRODUCTION -INSTRUCTIONAL STRATEGY

The phrase ‘instructional strategy’ is borrowed from the military jargon, where strategy is the science and art of ‘planning’ and directing large operations for military movements in a campaign. A commander makes an integrated use of resources to achieve the specified aim. A teacher is also considered a master strategist in the classroom or any other location, as he/she has to plan and direct various T-L events in such a way that learning outcomes of the lesson are achieved.

An ‘Instructional Strategy’ is the term used to define the combination of different types of instructional methods which incorporates the use of different media, thereby continuously bringing in stimulus variation at the relevant time when they are rightly required. A teacher must try to select and use different instructional methods suitable to the total class and also taking care of the individual differences among the students. For example, to develop a practical skill, the demonstration method followed by the drill-and-practice is the best ‘instructional strategy’.

‘An instructional strategy is the science and art of planning and directing the use of teaching learning events for achieving the objectives using appropriate instructional method(s)’.

A strategy may comprise one or more instructional methods to deliver the learning and is symbolically represented in Figure 1.

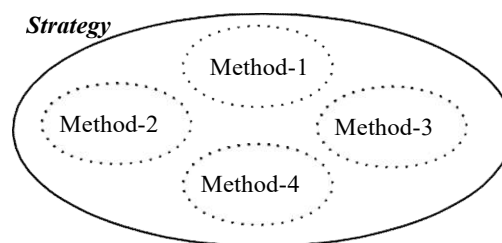


Figure 1. Instructional Strategy - Instructional Methods Relationship**2.****TYPES OF STRATEGIES**

The instructional strategies can be broadly classified as:

- a) Teacher-centred strategy
- b) Student or Learner-centred strategy
- c) Mixed strategy.

A **teacher-centred strategy** is one in which, the teacher plays the active role more as an information provider.

A **student-centred strategy** is one in which the student plays an active role for his or her learning.

A **mixed strategy** is one in which there is a role change between the teacher and the student during T-L sessions. Sometimes teacher is more active, and some other time student is more active. Role of the teacher may change from information provider to a facilitator of learning, guide or a counsellor for students.

Instructional strategies may also be classified differently such as the:

- 1. Deductive strategy'
- 2. Inductive strategy
- 3. Eclectic strategy'

In the '**deductive strategy**', the teacher dispenses the information to the learners and they assimilate it, i.e. the 'rule' or 'principle' of the topic in course is first defined and taught to the students after which the teacher provides examples using different instructional methods orally, through visuals, or video clips in which the rule or principle that were taught is applied in that machine/ instrument or process. Therefore this is also known as **Rule-eg** strategy, or **expository** strategy. The assumption of this method is that:

- The teacher knows the needs of the students.
- The teacher can transmit the message effectively.
- It is easier to understand.

In the '**inductive strategy**', the teacher first presents various examples and/or applications using different instructional methods such as brain storming, simulation, role-play, question answer technique or visually or through video clips and helps the students to discover the rule or principle that is underlying or being used in that machine/instrument or process. Therefore, this is also known as discovery strategy or **eg-rule** strategy. This method of learning is more exciting to the students as they experience the joy of discovering the rules and/or principles related to that topic of the course.

However, inductive strategy may sometimes require relatively more time than the deductive strategy. The assumptions in this method are:

- Learning by doing is more effective.

- Students have intrinsic motivation when there is relevant problem to solve.
- Students are capable of generalizing on their own. On the basis of examples they can find out underlying principles.

Sometimes '*eclectic strategy*' are employed, wherein a combination of both the deductive and inductive strategies are used by the teacher to teach various facts, concepts, principles and procedures.

Such classifications of instructional strategies provide cues to the teacher as to how to use a judicious mix of the instructional methods to develop the pre-determined learning outcomes in the students, thereby making the T-L more effective and efficient.

3. TEACHER-CENTRED STRATEGY

The teacher-centred strategy is the most common one. Control of the T-L session lies with the teacher. It helps the teacher to transmit factual information and relatively more information to the students in the minimum time. Moreover, it is less demanding on the part of the teacher. But, it turns out to be boring to the students as students are more or less passive and hence not very effective in the application of the knowledge imparted. During the T-L sessions, students listen, observe and take down notes. They usually respond only when the teacher asks them.

Assumptions

The following assumptions justify the use of this strategy.

The teacher:

- a) knows the needs of the students fully.
- b) can deliver the lesson more effectively.

4. STUDENT-CENTRED STRATEGY

In the student-centred strategy, also known as learnercentred strategy (Figure 2), the student will play an active role, while the teacher's role will be predominantly of a guide or a counsellor. Control of TL session is in the hands of the student. Student is more or less autonomous about his/ her learning. Teacher's role, though extremely important, is not that of an information provider. It is more of a 'facilitator' or a 'guide' or a 'mentor'.

When this strategy is used, the students are actively involved in the learning process, 'learn to learn' and think on their own and feel rewarded when they solve problem(s). However, this strategy may sometimes seem more demanding on less able students and also more time consuming as compared to teacher-centred strategy.



Figure 2. Student Centred Strategy

Assumptions

Knowing about some basic assumptions of this strategy will be helpful, which are:

- a) 'Learning-by-doing' is more motivating.
- b) Students have an intrinsic motivation, when there is a relevant problem to solve.
- c) On the basis of examples, the students find out the underlying principle, rule or law governing them.
- d) There is an academic thrill in discovering by oneself.

5. MIXED STRATEGY

It may so happen that in order to facilitate learning and establish channels of information flow; the teacher may have to adopt a combination of teaching methods, which are both teachercentred and student-centred. When such a strategy is used, both the teacher and students are active, and the focus still continues to be on the learning outcome(s) that should occur in the students as illustrated by the following example.

Example

Suppose the learning outcome of a course is 'the student will be able to use (operate) a singlephase induction motor (or any other equipment related to any branch of engineering).

In this case, there are two dimensions to it. One dimension is the cognitive domain like – 'discriminate various parts of the equipment or explain the functions of various parts of the induction motor (or the concerned equipment or process)'. This dimension may have to be addressed using the teacher-centered strategy and using methods like improved lecture, demonstration and others.

The other dimension is the psychomotor domain component - that of 'manually using or operating the real induction motor (or the concerned equipment)'. For this, the teacher needs to adopt the student-centered strategy by allowing the student to discover the fault through the laboratory experience, project work and other methods.

In fact, as seen in the last lesson, deciding the strategy also depends on various other criteria like the availability of the resources, time constraint, pace of instruction and others.

6. INSTRUCTIONAL METHODS CONTINUUM

To fully comprehend the classification and use of these instructional strategies, the instructional methods are represented diagrammatically as instructional methods continuum (Figure 3) based upon roles of teacher and students. The upper row lists methods, where the teacher's role is that of an information provider. For example, when the lecture method is employed, or when demonstrating the working of a mechanism, the teacher role is predominant, as the teacher plays the major role of an information provider.

The list of instructional methods in the middle column i.e. lecture, improved lecture and demonstration is considered as teacher-centred methods.

Based on Figure 3, some more observations can be made:

- a) The middle column gives a continuum of instructional methods beginning with teacher-centred strategy to the student-centred strategy. In between there are instructional methods, which can be used as mixed strategy as both teacher and student, playing substantial role in the teaching-learning process.
- b) Teacher role decreases from that of direct information provider as can be seen outside the first column in this continuum. However, it does not become unimportant. On the other hand, it becomes much more important and crucial. Role shift is from direct information provider to that of a facilitator of learning, to that of a guide to learning and learners, to that of a mentor or counsellor to learners on their learning. This is evident as seen in column 1.
- c) For the methods starting from tutorial method all the way down, the teacher facilitates the student to learn by himself/herself. These methods are fairly good, even to develop some desirable attitudes like respecting the views of others, co-operation, teamwork, leadership and others. This is because a student has to interact with other persons in varied situations.
- d) It can be seen in the third column that the student role increases down the rows in the continuum. After each row the student becomes more active in the learning process. From an inactive role in the lecture method usually, where there is 'monologue' by teacher only, it shifts to dialogue, interaction, action and then to reflection towards the end. In methods like seminar, group discussion, case study, game, simulation and others, there is usually more interactions between learners and the teacher and amongst learners themselves. This could lead to the development of certain social skills among the students because of the interaction that takes place during the learning process.
- e) In laboratory, project work and assignment, most of the responsibility of learning is transferred to the student and he/she has to take action. This gives him/her the practice of taking certain decisions. In the assignment method, laboratory or project work, industry/field visit, the teacher functions as more of a guide as the student acts on his/her own and struggles to learn. The teacher plans and may also solve certain problems, which the students face during this process of learning. As the students are active in the learning process, their retention and learning is more.

Teacher's Role	Instructional Methods	Student's Role
<i>Decreases</i>	Teacher-centred	<i>Increases</i>
Information Provider	Lecture	<i>Monologue</i>
	Improved Lecture	<i>Dialogue</i>
	Demonstration	
Facilitator	Tutorial (Individual/Group)	<i>Interaction</i>
	Buzz Session	
	Seminar	
	Brainstorming	
	Game	
	Panel Discussion	
	Case Study	
	Roleplay	
	Group Discussion	
Guide	Assignment	<i>Action</i>
	Laboratory/Workshop/Field work	
	Simulation	
	Project Method	
	Industry/Field Visit	
Mentor	Self-directed learning	<i>Reflection</i>
	ICT-Based Learning	
	Student-centred	

Figure 3. Instructional Methods Continuum

- f) Towards the end of the continuum, students' role in the T-L process leads to 'reflection' mode, if learning has to be more effective. It can be noted that the instructional methods such as web-based learning (also commonly known as on-line learning), computer-assisted learning and self-learning module can be used as a fully student-centred strategy. These are all self-learning methods and provide considerable autonomy to the student to control his/her own learning. In these methods, student is active and not passive and continues to act, interact and reflect depending on the design, as the T-L process goes on. This prepares the student for independent study and he/she can be said to be in the reflection phase. As student works through the lessons, the lessons make him/her to reflect back on the answers and decisions, which he/she takes, in-turn reinforcing his/her learning.
- g) The continuum shown in *Figure 3* is not 'sacrosanct' or 'prescriptive'. This is the author's view, when the T-L takes place in the right spirit. However, if a student does not do the laboratory work on his own assigned to him, and teacher or laboratory instructor does everything for him, use of this method can't be called a student-centred strategy. Student is not doing any 'action' and teacher is not a 'guide' in this case. Teacher or laboratory instructor is functioning like an 'information provider' as in a 'lecture', where there is 'monologue', and student has no role.

7. CONCLUSION

‘All said and done’, our ultimate aim is that the student achieves the required objectives. For this, a judicious mix of the instructional strategies incorporating a number of methods should be adopted. This will come only through sustained ‘practice and feedback’.

8. REFERENCES

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