Evolving Instructional Strategies

Introduction

Learning is an intentional activity. It requires a systematic planning and implementation of learning experiences. In the previous units, you studied about Instructional Systems and Different Teaching Methods for enhancing learning outcomes of the students. In this unit, we shall discuss the instructional strategies and how we can evolve them for effective teaching. We will also discuss the parameters for evolving instructional strategies at higher education.

Learning outcomes

At the end of the unit, you will be able to:

- define instructional strategies in your subject area;
- formulate instructional objectives for the content you are teaching;
- identify the parameters for evolving instructional strategies;
- design the learning experiences on the basis of Dales Cone of Experiences; and
- appreciate the role of evaluation for effective instruction.

What is an instructional strategy?

Teaching and Learning are complementary to each other. For the purpose of promoting learning in students, the learning experiences need to be well structured and presented to the learner in a meaningful way. The synthesis of these sets of activities is called instructional strategies. It is a process, which is explicitly and systematically designed to ensure that the learners accomplish the instructional objectives. The purpose of instruction is to improve performance. By clearly stating the results we want the learners to accomplish. We can identify if they have gained the appropriate skills and knowledge, because objectives are stated before learners begin their instructional process. They provide students, the means to organize their efforts toward accomplishing the desired behaviours. Therefore, instructional strategy refers to the systematic framework of action for accomplishing educational goals/objectives.

A useful objective, successfully communicates an intended instructional result to the reader by successfully communicating the intent. The best statement is the one that excludes the greatest number of possible meanings other than your intent. In other words, it succeeds in communicating your intent. Objectives are not brief descriptions of lesson content or descriptions of activities in which students will participate. Well-written objectives describe what the student will be able to do after learning the lesson.

Before writing an economics lesson, the author must identify the learning outcomes so that the lesson’s activities would be directed toward the desired results. If the objectives are not clear, the author may very well end up with other outcomes that are unexpected or undesirable. There are some basics to keep in mind when crafting instructional objectives. The actual format of instructional objectives varies in educational publications; however, good objectives are student-oriented, observable, clear and unambiguous, and descriptive of a learning outcome. An instructional objective describes what change will take place in
the learner - the student. Many instructional objectives begin with the phrase, “the student will be able to.” The focus is on the students.

**Criteria for completeness in instructional objectives**

The format known to work for stating clear objectives includes four characteristics that help an objective communicate intent. These characteristics answer four questions:

- **Who** will be doing the behavior?
- **What** should the learner be able to do?
- **Under what conditions** do you want the learner to be able to do it?
- **How** well must it be done?

An easy way to remember these components is to use the acronym: **ABCD**

- **Audience**
  The learners
  Identify who it is that will be doing the performance (not the instructor)

- **Behavior** (Performance)
  What the learner will be able to do
  Make sure it is something that can be seen or heard

- **Condition**
  State the conditions you will impose when learners are demonstrating their mastery of the objective. What will the learners be allowed to use?
  What won’t the learners be allowed to use? Under what conditions must the mastery of skill occur?

- **Degree** (or criterion)
  A degree/criterion is the standard by which performance is evaluated. The communication power of an objective increases when you tell the learners HOW WELL the behavior must be done. Focus on answering the question, “What’s good enough?”

  Common degrees include, Speed, Accuracy and Quality.

Therefore while framing the instructional objectives, it is necessary to follow certain criteria for its completeness.

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<td>1. <em>What do you mean by ‘Instructional Strategy’?</em></td>
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<tr>
<td>2. <em>What components you need to keep in mind when you frame the instructional objectives?</em></td>
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Objectives can be written for any type of learning. A common way to categorize learning is by the domain in which it occurs. The three domains as propounded by Benjamin Bloom (1956) are:

- **Cognitive**: thought or knowledge: “what the student is able to do” (an observable)
- **Affective**: feelings or choices “how the student chooses to act”
- **Psychomotor**: physical skills “what the student can perform”

The well all rounded and fully functioning person needs development in all three domains.
Bloom’s taxonomy of educational objectives: cognitive domain

Instruction should be used purposefully to achieve well-defined goals. It should focus on questions, which will require students to use the thinking skills. Bloom’s Taxonomy (Benjamin Bloom (ed.), Taxonomy of Educational Objectives: Handbook I Cognitive Domain (New York: David McKay Co., 1956) is a hierarchical system of ordering thinking skills from lower to higher, with the higher levels including all of the cognitive skills from the lower levels.

Below are the major categories in the Cognitive Domain of Bloom’s Taxonomy.

Knowledge

It is the simplest cognitive behavior that involves the recall of information. Objectives concerned with terms and facts, knowledge of methods and criteria for handling terms and facts, and knowledge of the abstractions of a field are properly classified in this category. It focuses on the remembering of previously learned material. This may involve the recall of a wide range of material, from specific facts to complete theories, but all that is required is the bringing to mind of the appropriate information. Knowledge represents the lowest level of learning outcomes in the cognitive domain.

Understanding

Objectives classified as “understanding” require the ability to reorganize, restate, and interpret the facts, the methods and criteria for handling facts, and the generalizations and abstractions of a field. The learner is expected to understand what the materials in question mean. Without understanding, the learner will not be able to move to the upper cognitive levels in this domain. Understanding has three sub-categories namely, translation, explanation and extrapolation.

Application

It refers to the utilization of knowledge in a new and different situation. Application covers things as rules, methods, concepts, principles, laws, and theories. Learning outcomes in this area require a higher level of understanding than those under comprehension. Application mainly refers to the utilization of known and comprehended materials in a new and different situation. Such materials can be main ideas, rules, principles, or even theories.

Analysis

It requires the individual to determine the elements of some problem or theory under consideration, the relationship among the elements, and the relationship of the elements to the whole. This level can be characterized as taking the “whole” of a problem and breaking it down into its various parts to extract meaning from the situation.

Synthesis

It includes behaviors like the development of a plan or a set of abstract relations. This level can be characterized as taking the various parts of a problem and putting them together to derive meaning from the situation. Learning outcomes in this area stress creative behaviours, with major emphasis on the formulation of new patterns or structures.

Evaluation

Evaluation or judging of theory or products according to internal evidence or external criteria are properly classified as evaluation objectives. Measurement at this level requires utilization of the lower level mental skills (knowledge, comprehension). The student is required to decide between right and wrong, good and bad, relevant and irrelevant. These decisions require knowledge and ability to analyze and synthesize data in the forming of
sound, logical judgments. Items of this type are often quite difficult to construct because the necessity of being able to defend one alternative as a better response to an item than all other possible alternatives.

### Self-assessment

3. **What are the Major Categories of Cognitive Domain in Bloom's Taxonomy**

It is also necessary to know the competencies and the corresponding skills demonstrated in the Cognitive Domain of Bloom's Taxonomy of Educational Objectives. The following table highlights the different levels of cognitive domain and associated action verbs. This will help in preparing the instructional objectives.

**Table: 1 Competencies and the Corresponding Skills Demonstrated in the Cognitive Domain of Bloom's Taxonomy of Educational Objectives**

<table>
<thead>
<tr>
<th>Competence</th>
<th>Skills Demonstrated</th>
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<tbody>
<tr>
<td>Knowledge</td>
<td>• observation and recall of information</td>
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<tr>
<td></td>
<td>• knowledge of dates, events, places</td>
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<td></td>
<td>• knowledge of major ideas</td>
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<tr>
<td></td>
<td>• mastery of subject matter</td>
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<td></td>
<td>• <em>Question Cues:</em> list, define, tell, describe, identify, show, label, collect,</td>
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<tr>
<td></td>
<td>examine, tabulate, quote, name, who, when, where, etc.</td>
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<td>Comprehension</td>
<td>• understanding information</td>
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<td></td>
<td>• grasp meaning</td>
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<td></td>
<td>• translate knowledge into new context</td>
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<td></td>
<td>• interpret facts, compare, contrast</td>
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<td></td>
<td>• order, group, infer causes</td>
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<td></td>
<td>• predict consequences</td>
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<td></td>
<td>• <em>Question Cues:</em> summarize, describe, interpret, contrast, predict, associate,</td>
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<td></td>
<td>distinguish, estimate, differentiate, discuss, extend</td>
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<tr>
<td>Application</td>
<td>• use information</td>
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<tr>
<td></td>
<td>• use methods, concepts, theories in new situations</td>
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<td></td>
<td>• solve problems using required skills or knowledge</td>
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<tr>
<td></td>
<td>• <em>Questions Cues:</em> apply, demonstrate, calculate, complete, illustrate, show,</td>
</tr>
<tr>
<td></td>
<td>solve, examine, modify, relate, change, classify, experiment, discover</td>
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<tr>
<td>Analysis</td>
<td>• seeing patterns</td>
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<tr>
<td></td>
<td>• organization of parts</td>
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<tr>
<td></td>
<td>• recognition of hidden meanings</td>
</tr>
<tr>
<td></td>
<td>• identification of components</td>
</tr>
<tr>
<td></td>
<td>• <em>Question Cues:</em> arrange, divide, compare, select, explain, infer</td>
</tr>
</tbody>
</table>
| Synthesis       | use old ideas to create new ones  
|                | generalize from given facts  
|                | relate knowledge from several areas  
|                | predict, draw conclusions  
|                | *Question Cues:* combine, integrate, modify, rearrange, substitute, plan, create, design, invent, compose, formulate, prepare, generalize, rewrite  
| Evaluation     | compare and discriminate between ideas  
|                | assess value of theories, presentations  
|                | make choices based on reasoned argument  
|                | verify value of evidence, recognize subjectivity  
|                | *Question Cues:* assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare, summarize  


**Affective domain of the taxonomy of educational objectives**

The Affective Domain addresses interests, attitudes, opinions, appreciations, values, and emotional sets. If the teaching purpose is to change attitudes/behaviors rather than to transmit/process information, then the instruction should be structured to progress through the levels of the Affective Domain:

**Receiving**

The student passively attends to particular phenomena or stimuli [classroom activities, textbook, music, etc.] The teacher's concern is that the student's attention is focused. Intended outcomes include the pupil's awareness that a thing exists. Sample objectives: listens attentively, shows sensitivity to social problems. Behavioral terms: asks, chooses, identifies, locates, points to, etc.

**Responding**

The student actively participates. The pupil not only attends to the stimulus but reacts in some way. Objectives: completes homework, obeys rules, participates in class discussion, shows interest in subject, enjoys helping others, etc. Terms: answers, assists, complies, discuss, helps, performs, practices, presents, reads, reports, writes, etc.

**Valuing**

The worth a student attaches to a particular object, phenomenon, or behavior. It ranges from acceptance to commitment (e.g., assumes responsibility for the functioning of a group). It includes attitudes and appreciation. Objectives: demonstrates belief in democratic processes, appreciates the role of science in daily life, shows concern for others' welfare, demonstrates a problem-solving approach, etc. Terms: differentiates, explains, initiates, justifies, proposes, shares, etc.

**Organization**

Bringing together different values, resolving conflicts among them, and starting to build an internally consistent value system—comparing, relating and synthesizing values and...
developing a philosophy of life are parts of organization. Objectives: recognizes the need for balance between freedom and responsibility in a democracy, understands the role of systematic planning in solving problems, accepts responsibility for own behavior, etc. Terms: arranges, combines, compares, generalizes, integrates, modifies, organizes, synthesizes, etc.

Characterization by a Value or Value Complex

At this level, the person holds a value system that controls his/her behavior for a sufficiently long time. Behavior is pervasive, consistent and predictable. Objectives are concerned with personal, social, and emotional adjustment, display of self reliance in working independently, cooperation in group activities, maintenance of good health habits, etc.

Self-assessment

4. What are the major categories of Affective Domain?

The third dimension of Bloom’s Taxonomy is the Psychomotor domain that reflects the motor skills. Let us understand this domain in detail.

**Psychomotor domain of the taxonomy of educational objectives**

Instructional objectives and derived questions/tasks typically have cognitive/affective elements, but the focus is on motor skill development. The suggested areas for use are speech development, reading readiness, handwriting, and physical education. Other areas include manipulative skills required in business training (e.g., keyboarding), industrial technology, and performance areas in science, art and music. In the psychomotor domain, performance may take the place of questioning strategies in many cases.

2. Basic-fundamental movements. Loco-motor movements, non-locomotor movements, manipulative movements.
5. Skilled movements. Simple, compound, and complex adaptive skills.

**Specifying the objectives in behavioural terms**

In Unit 1, we have seen that the goal of teaching is to produce learning that is some change in the behaviour of the learner. We also studied that there exists the necessity of getting feedback, some evidence, some data, to check if the expected learning has taken place at the end of the process. The evaluation during, or at the end of, a session is required to see whether the students have learnt or in other words whether the teaching process has been designed effectively. For this purpose, our objectives shall have to be specific, i.e., not vague or ambiguous in terms of learners behaviour which is observable and hence, measurable.

Now compare the following statements and decide which of these are specific objectives in terms of learners behaviour.

i) The student will understand principles of electricity.
ii) The student will be able to describe the role of Shivaji in building the Maratha empire.

iii) The teacher will explain the concept of latitude and longitude by using a map.

iv) The student will be able to select an appropriate instrument for measuring moisture in the air.

What is your answer?

Statement (iii) is obviously not a statement of learning outcome and in that sense it is not an instructional objective. It merely describes an activity which a teacher will be engaged in. It describes the teaching method but not the instructional objective.

Statement (i) refers to a learner’s behaviour, but what does the word “understand” mean here? A primary school child understands what electricity is in the sense that, he can push a certain button to get light in the room. An older boy may understand it in terms of the shock that he might have received. An undergraduate college student understands it (we hope) in that he can describe the process by which it can be generated, while an engineering student can set up an experiment to demonstrate how electricity can be generated. Thus the word “understand” is vague, since it does not indicate the level of understanding. Hence this objective needs to be tightened up—made more specific by relating it with the activities which a student can display, so that his learning can be observable and measurable.

The terms “know”, “understand”, “think”, “comprehend” are all words in this category, which do not indicate any specific action that can be observed. Hence there is the need to express these mental processes into some action verbs which indicate the exact desired change in behaviour.

Examples

i) Describes/writes/defines/states the principle in his own words.

ii) Identifies examples (out of those given) of the principle.

iii) Provides (new) examples/illustrations of the principle.

iv) Infers/derives tenable hypothesis based on the principle.

v) Distinguishes between two examples (positive-negative) or between two hypotheses or between principles by pointing out specific criteria.

vi) Explains the relationship between two or more given principles.

Add more such statements which you think can be implied by the term “understand” Let us take another example:

The statement, “he will be able to think critically” could be transformed to: He will be able to:

i) distinguish between facts and opinions.

ii) distinguish between relevant and irrelevant information.

iii) identify fallacious reasoning in a given argument/statement.

iv) identify/detect/point out, the limitations or inadequacies of a given data.

v) formulate/infer valid conclusions from a given data.

vi) identify/point out what additional data are required to make certain generalisations.

vii) formulate a reasonable hypothesis for further probing/experimenting.

viii) identify assumptions, underlying conclusion/behind an argument.
Of course all the above kinds of objectives are to be stated in the context of the specific topic/content that you have selected to teach in a given time period.

How specific should an instructional objective be?

The first test is that it should enable you to write/formulate questions for assessing whether that particular objective is reached. This means that it should also indicate the level and the conditions under which the behaviour is to be displayed.

The second test of the sufficiency of the specificity is when another expert teacher of that subject is able to formulate examination questions of the same level of difficulty and complexity which you aim at, in teaching that topic.

In other words, the instructional objective should be specific enough for two experts to derive the same meaning out of it and decide its desirability or otherwise, its measurability.

Now, go back to your table of specifications and write five instructional objectives which are observable and hence measurable.

Before specifying the objectives, determine your target group, i.e., the students whom you expect to achieve these objectives, and the approximate duration.

Difference between instructional objectives, goals of education, terminal behaviours and learning outcomes

So far we have used these words rather loosely and hence interchangeably. But, then is there really difference amongst them? Yes, and henceforth we should try to use them with their specific meanings. (See figure 3 - Output of a system of education).

The term “Goals of Education” refers to the long-term goals. They are, sort of, general or universal, e.g. to develop citizenship, to develop critical thinking, etc. The time duration in which these are to be attained is not strictly specified. As against this, instructional objectives are objectives which a teacher (designer) has placed before himself to be achieved during a specified instructional period. The instructional objectives should not be vague in that they are stated in observable and hence measurable terms, e.g. on the topic of citizenship to be taught to first year university graduate students, the instructional objective could be:

"They will be able to describe the rights of a citizen guaranteed by the Constitution of India"
Instructional objectives and terminal behaviours

The statements describing terminal behaviours are to be distinguished from goals of education which are usually vague.

Terminal behaviours are observable and measurable. Often they are derived from the job analysis - or tasks required to complete a particular kind of job. Such a set of statements sometimes include tasks or behaviours which are not specifically taught, as they are presumed to have been mastered by the learner prior to the instruction. On the other hand, there could be some behaviours that will be displayed only after a long practice and which cannot be provided during the instructional period.

For example, the job of a typist might require that he types 60 words per minute and one can attain that speed using a certain method but only after some days' practice. But in the instructional period of, say, a week, the objective could be that he types using all the fingers and without looking at each type set. The speed of so many words would not be an instructional objective, only the competence using a certain method by which, at some later date, he can attain that speed, would be the instructional objective. Thus, instructional objective would be a part of the bigger whole-terminal behaviours, but may not include all the behaviours/tasks that the student is to perform on the job.

Instructional objectives and learning outcomes

These two terms are synonymous, although there is difference in perspective in the conceptual framework in which they are used.

The term instructional objective, in a sense, presumes that somebody, other than a learner, is planning the instructional process and that this external authority is describing the end result of that process.

The term learning outcome does not necessarily imply such a deliberate systematic planning of instruction. The learning outcome may or may not be a result of the planned instruction. It may happen due to several other reasons which may or may not be known to the learner and/or to the external authority, namely instructor.

Self-assessment

5. The difference between instructional objectives and goals of education is that:

   a) Goals are usually too high and hence not practicable.
   b) Instructional objectives are too narrow and hence not desirable.
   c) Instructional objective are observable and measurable; goals are not.
   d) There is no difference between the two.

6. Given below is a list of verbs. Choose the ones that can specify the instructional objective in behavioural term:

   a) predict,  b) modify,  c) compile,  d) think
   e) synthesise,  f) distinguish,  g) evaluate,  h) compute,
   i) understand,  j) analyse  k) explain

Evolving instructional strategy

For understanding the Instructional Strategy, it is necessary to understand the human information processing strategies. Human mind processes information, generates cognitive structures to be stored in memory, or translated into behaviors such as understanding.
Instruction in a Systemic Perspective

speaking language, and solving problems. The information received by the mind experiences a series of transformations until data can be permanently stored in memory. According to the Atkinson-Shiffrin (1968) model, information enters memory first through the five senses or sensory memory and holds the information temporarily where aspects of selective attention, automaticity, and pattern recognition occur. Then it enters short-term or working memory where it can be rehearsed, expanded through chunking, or encoding. At this stage the information is being controlled for a response or transferred into long-term memory where it becomes permanent and is incapable of being lost. Information now takes the form of episodic or semantic memory. Episodic memory focuses on specific events, while semantic memory is associated with the use of language and has the most interest from educators.

Instruction must be designed not to put knowledge in learners' heads but to put learners in positions that allow them to construct well-structured knowledge. The life and career of Jerome Bruner (1960) had a significant impact on the cognitive approach to instruction. Bruner believed that the curriculum of a subject should be determined by the most fundamental understanding of the underlying principles that give structure to the subject. This structure included applying disciplinary knowledge. Perhaps the most memorable statement Bruner made was that any subject can be taught in some effectively honest form to any child at any stage of development. His spiral curriculum suggested that one could start with fundamental notions about a subject and expand them to greater details, even to abstract descriptions. This building blocks approach revisits basic ideas over and over again, building upon them until the student fully grasps the complete process.

David Ausubel stressed the importance of cognition in planning instruction and developed certain principles as to how learners increase and reorganize their stored knowledge base. He believed that knowledge could be increased when ideas are established and grouped in cognitive structure. Ausubel then stated that the ideas have direct and specific relevance for subsequent learning tasks; possess enough explanatory power to render otherwise arbitrary factual detail potentially meaningful; provide the stability for newly learned detailed meanings; and organize new ideas or facts around a common theme, combining new knowledge with the existing knowledge already there in the cognitive structure. This instructional design theory involves what Ausubel termed Advanced Organizers.

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<td>7. What are the contributions of Bruner for evolving Instructional Strategies?</td>
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<tr>
<td>8. What are the contributions of David Ausubel for classroom instruction?</td>
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The process of designing effective and efficient instruction for learners is an ongoing challenge to educators. The ability to implement predictable learning into an organized framework should be the ultimate goal of educators. When designing instruction, it is important to keep in mind how students acquire, process, and use the knowledge they have learned. Cognitive learning strategies view learning as an active process that occurs within the learner. The outcome of learning depends upon how the information is presented and how the learner processes that information.

Another relevant component of effective instructional design involves activating the use of relevant background knowledge, or schema. Jerome Bruner called this the "mental map." The significance of schema to instructional design involves the action to stimulate recollection of previously learned relevant knowledge. A student must be aware of relevant schema and be exposed to strategies that allow him to bridge beyond prerequisite skills to learning objectives. Also important here is the idea of conceptual neighborhoods.

Now we have understood the different perspectives of human information processing models. All these help in evolving an instructional design. There are different steps involved in developing instructional strategies.
Let us understand each one of them in detail

Analysis

A thorough analysis of the learner needs and interests is important. This would help in formulating the learner goals. It includes learner needs and interest, the concerns of society, and the present and future learner needs. The formation of goals must also be appropriately communicated. Anything that is respectably worth learning can be taught in a conceivable form.

Design

Design is concerned with subject matter analysis, lesson planning, and media selection. A course of instruction may focus on skills from three different objective domains, Cognitive, Psychomotor, and Affective. We have discussed these domains in the previous section. Bloom's taxonomy orders the Cognitive domain from the most simple, Knowledge, through Comprehension, Application, Analysis, Synthesis to the most complex, Evaluation. The Psychomotor domain is concerned with gross and fine-motor skills looking at behaviors that can be determined through task analysis. The Affective domain deals with attitudinal behavior from simple awareness and acceptance to internalization as attitudes become internalized. Lesson planning requires that you determine your:

- **Objectives** defined in terms of specific measurable objectives or learning outcomes.
- **Skills, knowledge and attitudes** to be developed.
- **Resources and strategies** to be utilized.
- **Structuring, sequencing, presentation, and reinforcement** of the content.
- **Assessment** methods matched to the learning objectives to ensure agreement between intended outcomes and assessment measurements.

Development

Development is a process of creation and testing of learning experiences and seeks to answer questions such as:

- Have the learning needs and characteristics of the participants been accurately analyzed?
- Were the problem statement, the instructional goals and the instructional objectives appropriate for the learning needs of the participants?
- To what extent are the teaching resources, instructional strategies and the participants' learning experiences successful in effectively meeting the instructional goals and objectives of the target audience?
- Is it possible to accurately assess participant learning with the proposed course of instruction?

Implementation

Implementation is the presentation of the learning experiences to the participants utilizing the appropriate media. Learning, skills or understanding, are "demonstrated" to the participants, who practise initially in a "safe" setting and then in the targeted workspace. It may involve showing participants how to make the best use of interactive learning materials, presenting classroom instruction, or coordinating and managing a distance-learning programme. The progress of the learning frequently follows cyclic patterns based on motivation and intention. Curriculum should be organized in a spiral manner such that the participant continually builds upon what they have already learned.
Evaluation

Evaluation is of two levels. The most important is to gauge the success of the participant obtaining and retaining the demonstrated skills and understandings. The second is to determine how successful the instructional design package was in facilitating effective participant learning. The final question becomes, How can I modify the package to improve its next presentation? Evaluation provides a framework for reorganization of the learning experiences and thus refines the process.

Self-assessment

9. What are the different steps involved in the evolution of an instructional strategy?

Deciding time duration

In the above process of developing instructional strategy, it is necessary to decide time duration for each and every learning experience. This component depends on many other factors such as;

- The nature of the content,
- Level of the learner,
- Method of Teaching as per the pre-defined objectives,
- Type of the Learning Experience.

Now here you will get into a problem. Some objectives take a long time—may be years to learn, while some others can be learnt in a few minutes. For example: If you want to teach a student (or from another perspective—if a student is to learn) how some Englishmen first came to India as traders, and then how the East India Company was formed and how they later started conquering and ruling different parts of India; you will require, say, about an hour or two to describe the process. But if you want to get your students to “see” the implications of this trading strategy on the spread of colonialism and also link it with the rise of the Industrial Era in Europe, it will take more than a few hours—probably a week or more. Similarly, if you want to give opportunities to your learners to “think”, “sort out evidences” and “identify gaps in argument”, etc., and for which you decide to use the “project method”, it may not be possible to “finish” the topic even within a few hours.

Selection of the appropriate method(s) and media

In Units 2 and 3 of this Block, you have studied some methods and you are also going to study more of them in the next Block. Anyone or more (in combination) of these methods can be used to help learners achieve the instructional objectives.

Remember, what we said about a strategy is also true about each of these methods. No teaching method is singularly good or bad. It can be effective or ineffective with respect to a particular goal. For example, a lecture giving information about the formation of East India Company may be good, if the goal is to pass on certain information, and certain data about the Company to the students. But listening to the lecture does not give an opportunity to the learners to derive the implication of such historical events. Even when a lecturer explains such implications and they are heard and later reproduced by the students, the listening, and then the reproducing of certain data, does not provide an exercise to the thinking—in this case, the inferring process of the learners. In other words, a lecture could be effective in relation to receiving some information by the learners, but it may not be effective in terms of making them think. The lecture gets less and less effective if it
presents discrete facts, unrelated data rather than the meaningful information which enable learners to build relations, ("see a pattern" "develop a conceptual map" etc.) (for conceptual map see Unit 7 of Block 2).

Similarly, appropriate media are also to be selected. Another important distinction to be remembered, is between a Method and a Medium. A medium is a vehicle for a message. One may present a message (or series of messages) through a teacher's throat (which is what we call lecture), or through a tape recorder, or through a visual chart, a film, etc. The term "Method" on the other hand, includes the medium, but it is more than a medium in that it also refers to the way the message is organised and sequenced, the manner in which the different bits of messages are integrated, the manner in which the different media are used and related to increase the possibility of the messages being received and comprehended by the listener.

For example, in a group discussion as a method, more than one medium—teacher and participant are used. As distinguished from a lecture (devoid of question answer component), in a group discussion, the sequence of messages is not entirely controlled by a teacher (although to a certain extent a teacher/leader of the group discussion can control the flow of the discussion).

Time duration is also determined by the actual teaching hours as per the norms of the institution. This is an external factor, which also need to be taken into consideration.

In units 2 and 3 of this block, you have studied some methods and you are also going to study more of them in the next block also. Some times multiple methods can be used to help learners achieve instructional objectives. At this juncture, we must discuss about the different learning experiences that promote meaningful learning in students.

For using these methods along with the proper media, you will require certain skills and of course practice. In Block 2, we shall discuss more about these skills.

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**Self-assessment**

10. Rate the following factors as Very Important (A), Important (B) and Not Important (C) while selecting a teaching method. Put a circle around your choice For example if 'A' is your choice, encircle it like this : (A)

1) Previous experience of students  A   B   C
2) Media available to (or that which can be projected by) a teacher  A   B   C
3) Stage of cognitive growth of the students  A   B   C
4) Method used by the teacher when the latter was in the school/college  A   B   C
5) Method recommended by an old teacher  A   B   C
6) Method recommended by a foreign textbook  A   B   C
7) Logic of the subject matter to be taught  A   B   C
8) Motivation to study independently or in a group  A   B   C
9) Frequency of the feedback required for diagnosis and remedial training  A   B   C
10) Method which the teacher used with his previous classes in the past  A   B   C
11) Media relevant to the necessary learning experiences  A   B   C
Determining the learning experience

Selecting learning activities for your students is another major consideration when planning a course. Learning by nature is an active process; students learn better when they are involved with their learning and they learn in different ways. Therefore learning activities must:

- Allow students to see the relevance and importance of the course material.
- Give students the chance to use, demonstrate, or question the content.
- Choose activities that match the desired performance, e.g., if the desired outcome is problem solving, use case studies or role playing.
- Help students understand what your expectations are by giving them feedback.

One must consider the following when planning the learning experiences:

- What role will the activity play in the learning process (motivation, elaboration, practice, transfer of learning, problem solving)?
- How does the role affect the complexity and length of the activity?
- Does it have to happen face-to-face, or can it be done on-line? Will the students enjoy it?
- Start small. Most students don’t want a steady diet of group work
- Know your teaching strengths. Use activities that fit with your teaching style.

Edgar Dale had presented a schematic representation of the different learning experiences that can be provided to the learners for definite learning outcomes.

Dale’s cone of experience

Edgar Dale, a famous media specialist and communication theorist formulated a “Cone of Experience” (see figure 1). According to Dale, learning is more effective, if the learner is exposed to the concepts, not only through verbal symbols but also through some experiences relevant to the objectives.

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Dale’s Cone of Experience

<table>
<thead>
<tr>
<th>People Generally Remember</th>
<th>People are Able to (Learning Outcome)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10% or what they read</td>
<td>- Define</td>
</tr>
<tr>
<td>20% of what they hear</td>
<td>- List</td>
</tr>
<tr>
<td>30% of what they see</td>
<td>- Describe</td>
</tr>
<tr>
<td>50% of what they hear and see</td>
<td>- Demonstrate</td>
</tr>
<tr>
<td>70% of what they say and write</td>
<td>- Apply</td>
</tr>
<tr>
<td>90% of what they say as they do a thing</td>
<td>- Practice</td>
</tr>
<tr>
<td></td>
<td>- List</td>
</tr>
<tr>
<td></td>
<td>- Explain</td>
</tr>
<tr>
<td></td>
<td>- Demonstrate</td>
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<td>- Apply</td>
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<td>- Practice</td>
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<td>- Analyze</td>
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<tr>
<td></td>
<td>- Design</td>
</tr>
<tr>
<td></td>
<td>- Create</td>
</tr>
<tr>
<td></td>
<td>- Evaluate</td>
</tr>
</tbody>
</table>

Adapted from Wiman & Memhenry Education Media 1960 on Edgar Dale. (Computer Strategies LLC@1999.2002 all rights.)

Figure 3: Edgar Dale’s Cone of Experience
In the figure Lower levels of the cone involve the student as a participant and encourage active learning. Lower levels include more stimuli and are richer with regard to natural feedback—the consequences of an action. Higher levels compress information and provide more data faster for those able to process it. Pictures are remembered (recalled) better than verbal propositions.

Pictures aid in recalling information that has been associated with them. Upper levels of the cone need more instructional support than lower levels.

**Evolving instructional strategies — some parameters**

One may start evolving an instructional strategy from any perspective but somewhere along the line, the designer should ask himself questions similar to those listed below:

Does the instructional strategy:

i) provide relevant concrete experiences and also help the learner to develop his own cognitive map (abstracts, concept map, flowchart, etc.)?

ii) move from the simple to complex tasks, familiar to unfamiliar concepts and illustrations?

iii) follow the most effective psychological sequence, or does it rigidly duplicate the so-called logical sequence that is traditionally followed? (e.g., the textbook sequence may not be the most effective).

iv) encourage learners to develop new knowledge-discovery learning and inductive reasoning, even when a deductive method is followed; does it encourage the learner to subsume the new knowledge under the already formed concept network?

v) provide only one linear sequence, irrespective of the differences among the backgrounds of the learners or can it provide branching or more adaptive programme to suit individual differences?

vi) provide for a feedback process so as to make corrections, i.e., does it have a built in formative evaluation component or does it rely only on the last summative evaluation of the learners? (end of the term results, e.g., external exam at the end of the year.)

vii) provide gradual control to the learner on the learning process (does it give a learner control over the time and speed at which he can learn the material? Or, is the process completely determined by the teacher or the media of presentation used e.g., in television programmes, as distinguished from a videotape, the learner is completely at the mercy of the television producer and telecasting agency as to when he should learn and at what speed?)

viii) provide opportunities to interact with the other participants (i.e., does the strategy force him to work in isolation, or with the teacher alone or provide him with interactive situation-opportunities for participative learning?)

ix) provide learning situations which are just “bookish” or are they similar to real life (simulation of real life—on the job) situation?

One must, however, keep in mind that all these parameters are on a scale continuum i.e., they are not like an “either or” situation. For example, most instructional strategies will involve both abstract and concrete experiences, both deductive or expository types and inductive or discovery types of learning, etc. A strategy could provide, more or less of the concrete and the abstract, or less or more discovery or, less or more of the deductive “type of learning experiences.

One has to select the appropriate point on the scale of that continuum, and again, the appropriateness is to be judged in terms of the effectiveness and the efficiency of the strategy.
Tryout and validation

Any strategy once designed, cannot be straight way accepted as the most effective one, even if it is designed by supposedly very senior professors or highly respected educational administrators. It has to be first tried out with a group of learners and shown to be effective, that is to say, it must be demonstrated that the students learn/achieve the instructional objectives that the strategy has been designed for. How does one collect the data for validation? This, you will study in Block 4.

Self-assessment

11. Which of the following statements are true?

a) An effective teacher designs different methods rather than use just one method for all purposes.

b) One of the parameters within which a method is to be selected is the set of characteristics of the target group.

c) According to E. Dale it is always better to provide concrete experiences to the learner.

d) For adults, methods involving verbal abstract symbols are more effective and efficient, although this may not be so for children.

e) What is simple to a teacher may be complex to a learner and vice versa.

f) The sequence during learning should be similar to that used in the performance after the learning.

g) It is always more efficient to memorise a poem part by part (or line by line).

h) Modern science uses only inductive methods.

i) The teacher’s main job is to cover the curriculum prescribed for the examination.

j) Developing a cognitive strategy is more important than memorising discrete information.

k) Discovery learning is time-consuming and therefore impractical in a college context.

l) All learning exercises must be structured.

m) The only important function of feedback is to motivate a learner.

n) Experience oriented methods like role-playing allow for a higher involvement of a learner than, say, reading a textbook.

o) The modern trend is to give more control to the learner over his learning process, by making him a party to a contract of learning.

p) If the learning experiences are similar to that of the performances expected in real life the transfer of learning to real life is easier.

q) Media and methods should be combined to provide the different requirements of the learning process.

r) Multi-media packages re always superior to a single method of teaching.
Summary

In this unit, we have started our discussion with the concept of instructional strategy. It is a systematic process in which the learning experiences are logically and rationally structured to help the learners to acquire the terminal behavior and to achieve the instructional objectives. This unit has elaborately discussed the different instructional objectives as envisaged by Bloom. The Cognitive, Affective and Psychomotor domains of educational objectives are clearly defined and a detailed note is presented as to how these objectives can be presented in the instructional strategy.

This unit has given a clear view regarding the evolution of instructional strategy. At the end of the unit, some of the parameters that are to be taken into consideration while evolving instructional strategy were presented.

Unit-end activities

1. Visit any advertising agency and find out the steps involved in designing the advertisement for a particular product before actually launching a campaign?

2. Visit any library in the University setup and identify the various books/learning resource materials prepared in different instructional strategies. Describe how these are different from one another?

3. Identify the different websites on the internet related to e-Learning materials and analyse them on the basis of their content presentation.

4. Prepare an instructional strategy to teach any subject content of your choice for the undergraduate distance education students.

Points for discussion

1. How Instructional Strategies are essential for Teaching in Higher Education?

2. What are the different alternative instructional strategies presently being discussed in the context of adult education?

Suggested readings


Answers to self-assessment

1. Instructional strategy is a process which is systematically design to achieve the pre-determined instructional objectives.

2. Audience, Behaviour, Condition, Degree or Criterion.

3. The major categories in cognitive domain are: Knowledge, understanding, application, analysis, synthesis and evaluation.

4. The major categories in affective domain are: receiving, responding, valuing, organization and characterization.

5. C

6. a, b, c, f, h, k

7. According to Bruner, one could start with fundamental notions about a subject and expand them to greater details even to abstract descriptions. This approach could be followed while evolving instruction and strategies.

8. According to Ausubel, all new knowledge or information get accommodated and assimilated with the existing cognitive structure. Therefore, before presenting any new information, it is relevant to provide advance organizers. This is contribution Ausubel made for classroom instruction.

9. The steps in the evolution of instructional strategy are: Analysis design, development, implementation and evaluation.


11. a, b, e, j, n, o, p, q.