BOOK - REVIEW

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INTRODUCTION

Human learning is complex, but fascinating process. But there are few books which can be used as text books for explaining this process in an integrated way - combining behavioural, social learning and cognitive learning to give a total perspective of the learning process.

In the modern context of ever changing environment, learning has become a life long process, if one wishes to be able to coevolve with the growing complexity of the environment. Take for example, past liberalisation era after 1991. The industries in India, till how protected from competition from the outside world suddenly finds itself unable to take the challenges created by the competition, because existing stock of managers, professionals and operators have not been and are not able to acquire new knowledge, skills to upgrade their own organisation. The employees are finding it difficult to recruit new passouts of the educational system, because they are not equipped with continued learning skills. The managers of the educational system themselves are not in a position to change their curriculum to impart additional skills for lifelong learning, skills needed to transfer of theoretical knowledge to practice, systematically bring the existing organisations to the higher level of complexity.

The learning is no more restricted to formal and non formal system of education, but is now more needed in the informal system i.e. learning on the job.

Our basic problem with the managers both in the educational as well as industrial and service organisation is that they are not educated and trained in 'Learning Theories', the core knowledge necessary to manage teaching - learning system, whether formal, nonformal or informal.

This book is the first attempt by the

educational psychologist to bring different threads of educational psychology and weave them into a book which a student with little background of psychology can still understand.

Following section gives a brief description of the content of the book.

CONTENT OF THE BOOK :

The book is divided into six parts :

Part I - Introduces Human Learning.

Part II - Explains Behaviourist view of Learning.

Part III - Describes Social Learning Theory.

Part IV - Elaborates Cognitive View of Learning.

Part V - Explains complex Learning & Cognition.

Part VI - Describes Important Role of Motivation.

In part I, chapter 1 sends message to all learning, that learning process allows human race a greater degree of flexibility and adaptability and is important in changing environment. But to acquire learning skills, one must first understand by the scientific research. Scientific knowledge is the valid knowledge and can be used to understand, describe, predict events in learning. Equipped with these capabilities one can design instruction to accelerate learning more effectively. Science has made it clear that class-room teaching, on the job learning can not be left to chance and requires deliberate planning.

In part II, there are five chapters dealing with topics belonging to the family of Behavioural Science - chapter 2 describes historical development of behaviourism starting from Pavlov, Thorndike, Vatson, Guthrie, Hull to Skinner, Behaviourist observe overt behaviour of human being and formulate laws. They generally stress that the result of learning is manifested in overt behaviourist. If students want to learn, they should participate actively in learning process by carrying out activities. Secondly, the teachers should assess students' performance by observing and assessing behavioural change.

Chapter 3 starts with the classical conditioning principle proposed by Pavlov. It includes learning of involuntary responses, responses over which an individual has no control. People develop aversion or liking toward certain objects or people or event because they are closely associated with those object or people or event which naturally create aversion or pleasure. This principle points to the need to develop positive classroom environment for our students by not associating it with fear or unpleasantness.

Chapter 4 deals with 'Operant conditioning' and stresses the importance of reinforcers which rewards behaviour, because it increases the frequency of occurrence of such a behaviour. These behaviours are voluntary and they are task oriented. The result of the principle is the concept of shaping behaviour, which means teaching of a particular desirable behaviour through successive approximation. It provides direction to a learner as well as a teacher has to how to systematically proceed to acquire new task oriented behaviour by selecting appropriate primary and secondary reinforcers and choosing timing, magnitude and schedule of reinforcement. Learner,

however must learn to generalise as well as discrimate between stimulus environment and change appropriate responses through stimulus control. This principle is very useful in improving desirable behaviours and eliminating undesirable ones.

Chapter 5 illustrates the application of the operant conditioning. For example, it has laid the foundation for writing instructional objectives in behavioural term; programmed instruction and computer assisted instruction mastery learning, behaviour modification programmes.

It is useful in improving such behaviour like paying attention, social skills, cleanliness etc.. These techniques are useful with students with long history of academic failure, poorly motivated students, anxious students. But they are not suitable for intrinsically motivated and cognitively prepared students.

Chapter 6 deals with aversive stimuli which force students to avoid or escape from learning situations. It focuses particularly on the use of punishment. Certain experiments have found that punishments used appropriately reduce undesirable behaviour. This chapter describes guidelines in the use of punishment to promote its effectiveness. It is also found that when aversive stimuli are respeated regardless of how a person behaves, he or she may develop sense of learned helplessness - sense of having little control over the environment - with motivational, cognitive and emotional side effects.

Part III has only one chapter 7 dealing with 'Social Learning Theory'. According to this theory people learn by observing the behaviour of others and their outcome. It encompasses such concepts like observational learning, imitation and modeling. In social learning, people learn through observation and imitation of what has been learned. This type of learning involves little cognitive or mental efforts. In social learning people learn through cognitive processing of observed social events.

Learning through modeling is most important aspect of social learning. Such behaviour like effective reading, dealing with mathematical problems, resisting enticement of strangers intolerance towards bad social practices, moral and social behaviour can be learned through social learning.

Learning through modeling involves - attention, motor reproduction, retention and motivation.

Self efficacy i.e. the belief that the individual has about his ability to execute a certain prescribed behaviour, plays an important part in social learning.

An individual learns better in the social learning if he has the capability of setting standards, goals, self observation, self judgement and self reaction.

Part IV has six chapters and covers a broad unit of topic called 'Cognitive Views of Learning.'

Chapter 8 describes the historical development of cognitivism starting from Gestalt psychology, Tolmans purposive behaviourism, Piaget's developmental theory, Vygotsky's development theory. Then the transition from behaviourism to cognitivism through verbal learning research is traced. Finally, the theory of human information processing is introduced.

Chapter 9 on 'Perception & Attention' defines cognitive process as internal mental act and includes such phenomena as perceiving, paying attention, interpreting, understanding and remembering. It distinguishes learning as acquisition of information and memory as ability to recall information that has been precisely learned.

Perception is a meaning that we give to the stimulus and depends upon how one pays attention to the environmental stimuli. Perception i.e. meaning given to stimuli is affected by proximity, similarity, closure, context, past experience and expectation. Designing stimuli which takes all these factors into consideration while teaching is important. This chapter specifically explains how to focus students attention in class rooms, during reading and speaking process, improving study behaviour.

Chapter 10 deals with theory of memory. The memory consists of sensory register, Working Memory (WM) and Long Term Memory (LTM). Each component of the structure of the memory has specific function to perform, capacity to store and the duration of storage of information.

Working memory selects information from the sensory register, stores it for few seconds, processes it to provide meaning to stimuli with the help of LTM and then moves processed information to LTM. WM stores maximum information by chunking, since it can not handle more than 7+2 units of information. It maintains information for longer duration through maintenance rehearsals.

LTM stores information for long time provided it is organised into a hierarchy or network. It stores both specific events, images, as well as generic knowledge, It has unlimited capacity, One must understand the process by which LTM stores and retrieves information.

WM is the seat of consciousness and all active thinking is done here.

Chapter 11 explains how LTM stores information while chapter 12 explains how LTM retrieves information. LTM stores information in coded form : verbal, images, propositions, motor skills intellectural skills and episodes. This information is stored in hierarchical form or propositional network, Many pieces of information are inter connected through a variety of associations like using common lable, location, time sequence, compare and contrast organising principles. In the process of storing a person selects underlying meaning of the text rather than verbatim input. He uses existing knowledge about the world to help him understand new knowledge. The storage assumes permanency when the few information is enclosed through meaningful learning, then internally organised and further elaborated.

Chapter 12 describes LTM retrieval mechanism. The retrieval of information depends upon how information is stored and retrieval cues used. The retrieval cues are four types : identify cues, associate cues, organisation cues and encoding specificity. Repetition and review are important in facilitating retrieval.

Retrieval may be automatic or controlled. In automatic retrieval, information is gathered by the WM automatically. For learning higher task it is important to learn lower level sub-task at level of automacity.

Existence of some prior knowledge, meaningful learning, internal organis-

ation of new knowledge and elaboration are key to efficient storage and retrieval.

Chapter 13 describes the application of HIP (Human Information Processing). This story is useful in designing expository instruction, mnemonics, teachers, questions, designing wait time in eliciting student's responses, promoting conceptual changes and class room testing practices.

Part V comprises 3 Chapters and covers a broad topic on 'Complex Learning & Cognition'. Chapter 14 explains concept learning. It explains the difference between concrete and abstract concept, importance of defining concepts in terms of its characteristic features and their rules of combination. It also explains how to organise instruction in concept learning.

The last but the most important point, the chapter makes it to relate concept learning to other forms of learning - classical conditioning, operant conditioning, changing and verbal association (subsumed under the subordinate concept SR associations) and more complex forms - learning, discrimination concept, rules and higher order rules (Subsumes under the superordinate concept intellectual skills). It stresses that the simple forms of learning are necessary before other more complex can occure.

At this point, the chapter introduces yet another concept of 'Concept Mapping' indicating the inter-relationship among concepts of unit. Its importance is the use made by teachers in assessing student's performance

This chapter shows the way to analyse prerequisites to understanding a concept and design instruction accordingly.

Chapter 15 is on 'Meta - Cognition and study strategies'. This is the most important chapter for those who understand the importance of life long education. Meta cognition includes such knowledge and skill as :

1. Being aware of one's own learning and memory capabilities and what learning task can realistically be accomplished.

2. Knowing which learning strategies are effective and which are not.

3. Planning an approach to learning task that is likely to be successful.

4. Using those effective learning strategies.

5. Monitoring one's present knowledge state.

6. Knowing effective strategies for retrieval of previously stored information.

It then explains effective learning and study strategies like meaningful learning and elaboration, organising information, note taking, identifying important information, comprehension monitoring, summerising.

In order to promote effective learning and study strategies, it proposes effective study skills training for students within the context of specific subject domain and actual academic learning task, proving variety of tasks, scaffold students initial attempts at using new strategies and underline principles embedded in these skills. Students must have a sense of self efficiency so that they can practice with confidence these cognitive strategies.

Chapter 16 is on 'Transfer & Problem Solving' and explains how knowl-

edge and skills gained in one situation can be used in other new situation.

Meaningful learning of new material, mastery learning, acquiring more generic knowledge, practice in numerous situations learning to identify similarity in different situations facilitate transfer. It then goes to discuss problem solving strategies and the role cognitive factors like working memory capacity, encoding and storage mental sets in encoding, retrieval from LTM, knowledge base and meta cognition, play in problem solving. It also explains how to train students in problem solving : through meaningful learning, teaching problem solving at meaningful level, training WM to tackle simple information automatically, providing variety of instances to practice problem - solving, using discovery teaching methods and teaching general learning and problem solving skills.

Part VI on 'Motivation' has chapters 17 & 18 while in chapter 17 is described traditional theory of motivation, chapter 18 discusses cognitive factors in motivation viz setting goals, expectancies, values, learners beliefs about the causes of success and failure (called attributions). What is important is that for the first time importance of cognitive factors in motivating students to learn has been identified, for example; focus on learning goals, seeing value in learning subject matter, making learning matter meaningful, attributing success both to stable and unstable internal factors and failure to only unstable and controllable factors, allowing students some self - control in learning, ensuring that class room activities should be non competitive in nature,

ensuring self efficiency and high expectation for academic success.

COMMENTS :

In post - secondary education, cognitive activities play an important part in learning and performance. This book effectively shows that cognitive psychology combined with behavourist and social learning. Theories can help teachers to design instruction and learner to organise their learning effectively and efficiently. Most important to understand is importance of cognitive strategies which will enable learners to take control of their learning not only in formal educational setting but also in non-formal and informal setting. Learning on the job is gaining importance for the firms beginning to transform themselves and adopt themselves to the modern industrialisation process and competition. These theories also lay the foundation for learning in groups. Team efforts are now becoming important in the evolution process of industries and other organisations.

Along with the increasing importance of learning process in the enterprises, there is a great need to improve educational system itself to become capable of producing students who are not only educated and trained as a whole person but also capable of participating in life long learning process by taking responsibility for their own learning on the job. The transformation of educational system can be done only by those managing educational system and who have sufficient grounding in theories of learning.

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