UNIT 1 LEARNING AND ITS SCOPE

Structure

1.1 INTRODUCTION

Whenever you think of the word 'learning' you think of school and college. Don't you? I think most of us do. In our mind schools and colleges are intricately associated with learning. However, life experiences have shown us that learning does not always take place in formal set up alone. Learning does not occur always intentionally or in an organised fashion. In this unit we are going to discuss the concept of learning. How does learning occur? There are different kinds of learning. Certain types of learning occur due to the process of physiological development. Yet, again another kind of learning may be a result of physiological development and environmental interaction. There are different views regarding the concept of learning. In Block 5, we have discussed different learning theories in detail. Perhaps, you may like to go through Block 5 before proceeding with this unit or immediately after reading this unit.

1.2 OBJECTIVES

After going through this unit, you should be able to:

- discuss the concept of learning from the perspectives of behaviourism, cognitivism and constructivism;
- explain the concept of learning as propounded in situated cognition approach;
- explain different types of learning;
- distinguish between different types of learning; and
- organise learning experiences for children appropriately.

1.3 THE CONCEPT OF LEARNING: DIFFERENT PERSPECTIVES

Different approaches to learning such as behaviouristic, cognitive engender a specific view of the basic nature of learning. Different views obviously stem from the differences in orientations and emphases laid by different perspectives. Learning theories as put forward under different schools of thought have been discussed in

detail in Block 5. In this section, we will take an overview of the concept of learning from different perspectives.

a) **Behaviouristic Perspective**

In behaviourism emphasis is placed on behaviour as the legitimate content of psychology. It results in explaining learning as a "relatively permanent change in behaviour due to experience." There are three important underlying assumptions in this approach:

i) Behaviour as opposed to mind or consciousness lends itself to scientific scrutiny, thus processes of learning must be described in terms of behaviour.

ii) Sensory experience is the source of learning. For example, visual sensation of reddish colour, yellow or green, a particular shape and size and gustatory sensation of a particular taste results in the acquisition of knowledge about a certain type of edible fruit termed–apple. The physical sensation of the apple and the term that denotes it get associated and the name of the fruit is learned.

iii) Associationism: Two sensations that occur contiguously in time and space get associated; recall of one elicits the recall of the other. Therefore on seeing an apple one utters the word apple if asked to do so. Thus according to behaviourism uttering of the term apple is a response to stimulus, 'sight of an apple'. Apple is a complex idea but made up of simple ideas such as colour, texture, size, shape and taste which get associated in mind according to the law of contiguity and form a complex idea of apple. To perceive colour, texture, shape, etc. sensory experience is a must, the association of these basic sensations in mind is simple and mechanical; it does not involve any reasoning or manipulation, reorganization and interpretation. Different sensations (parts) are simply put together to make a whole.

Though Watson and Pavlov among the early behaviourists did acknowledge that behavioural change is an outcome of learning but the underlying processes were considered to be neuro-physiological. Associationistic theorists such as I. Pavlov, J. B. Watson and E. Guthrie viewed living organisms as automations whose responses to environmental stimuli are governed by the organism's sensory system; response system; and central nervous system consisting of innate circuitry and memories of prior experiences. In other words, Pavlov, Watson, and Guthrie explained the behaviour of organisms in terms of environmental stimuli, innate and acquired neural circuitry, and response capabilities.

Sensory experience (S) – neuro-mechanisms (NM) – change in behaviour (R).

S – NM – R

This could have been the end but Skinner raised behaviourism (as a school of thought) to its mechanistic heights when he stated that there was no need for mentalistic concepts such as mind, consciousness, thinking etc in explaining the process of learning. It was sufficient to know, 'what' causes change in behaviour rather than, 'why' it causes that change. In his analysis of the concept of learning, he found that the consequences of behaviour (reinforcement) determine learning. He was a staunch functionalist – he saw learning as a function or outcome of reinforcement. His work focuses on how reinforcement can be manipulated to achieve high rate of response, consistency in learning and resistance to forgetting.

However, the limitations of his view soon surfaced and the idea of human behaviour being shaped by reinforcement contingencies was found wanting. The presence of mind and therefore thinking was experientially too real to be ignored. There was an emphatic return to cognitive psychology in 1960s, particularly the cognitive information processing psychology.

Social learning theory suggests that learning takes place through the process of observation. Bandura's social learning theory borrows from behaviourism as well as cognitivism. According to Bandura human learning takes place through the process of observation and imitation. The innate potential for learning could be influenced by other factors. Bandura identified attention, retention, production process or motoric reproduction and motivation as the factors involved in observational learning.

b) Cognitive Perspective

The cognitive perspective considered reason to be the source of learning. The genesis of knowledge according to cognitive psychologists is in the active cogitation of mind. They assumed that sensory experience only provides raw data or acts as a potential source of information, which is interpreted or made sense of, in the mind through the process of reasoning. Thus

i) Reason is the source of knowledge.

ii) Perceptions are unitary, meaningful 'holistic'.

We do not sense individual sensations and then combine them to make a whole but we perceive (sensation & meaning) meaningful wholes as we have a tendency towards forming "good gestalts". Another important assertion of cognitive psychologists is that we do not make photocopies of external sense data but the mind interprets it according to certain conditions and factors operating at that time. Thus learning is explained as a process of knowledge acquisition that is the result of perceptual experience. This results in change of the likelihood to act differently even though this may not necessarily be demonstrated in the form of changed behaviour. Thus the subject matter of psychology is not behaviour *per se* but the processes that cause change in behaviour. Dual coding theories suggest that learning is better when the two processes such as visual learning and verbal learning are engaged. Cognitive structuralists believe that schemata are significant to cognitive learning.

The cognitive and the information processing approaches were both based on Cartesian dualism that separated body from mind and mind from the world. The psychologists continued to struggle to connect the body and mind. Piaget postulated action to be the source of knowledge, suggesting one way of dealing with the Cartesian impasse, i.e. explaining how external reality becomes internal knowledge.

c) Constructivist Perspective

Piaget emphasized that child constructs his/her knowledge by his/her own actions. Action performed in specific situations leads to the development of universal, general structures (schemas), which cut across contexts and domains. He believed that humans learn to adapt to the physical environment. He explained the process of adaptation through the concepts of schema, assimilation, accommodation and equilibration. Such an explanation left no scope for individual, contextual or content domain variations. All children were said to pass through same stages in same order. The four stages of cognitive development proposed by Piaget are:

Sensorimotor stage (birth to 18-24 months)
Preoperational stage (2 to 7 years)
Concrete operational stage (7 to 11 years) and
Formal operational stage (over 11 years).

In the sensorimotor stage the child graduates from the reflexive activities (reaching, grasping, sucking etc.) to more organised forms of activity, like solving a simple problem.

In the preoperational stage children begin to make decisions based on their perceptions as they yet lack a sense of logic.

In the concrete operational stage children develop the ability to think logically when the situation is concrete.

In the fourth and final stage of cognitive development, the formal operational stage, children become increasingly able to use logical thought processes.

However, researches indicated that the above claims were not valid. It was found that potters' children develop ability to conserve mass (better estimate of quantity of clay) before ability to conserve number or at least before the age suggested by Piaget. Likewise, farmer's children have a better sense of weight (how much is 1 kilo rice, for example) as compared to the conservation of any other property of objects.

Piaget was criticised for ignoring the significance of sociocultural factors in cognitive development. Lev Vygotsky gave an alternative view to Piaget's approach to construction of knowledge. He proposed that the stages of development as described by Piaget may not be true for all children. Vygotsky argued that learning is rooted in the sociocultural set up of the child where the child is not alone. The cultural set up in which the child is immersed provide him/her with a thinking perspective. He observed that children are capable of solving problems independently which he termed as 'zone of actual development'. But he believed that sometimes children solve problems with support, termed as 'zone of proximal development'.

The researches discussed earlier indicate the important role played by context in the process of learning. Today, there is a well-developed perspective on **situated learning/ cognition.** We will discuss it in the next section.

Let us sum up the discussion and trace the evolution of the concept of learning according to different perspectives.

Behaviourism – "Learning is change in behaviour due to experiences."

Cognitivism – "Learning is acquisition of knowledge, comprehension, skill, etc..."

Constructivism – Learning is a process of knowledge construction (Piaget)

Social constructivism – Learning is a social process of knowledge construction (Vygotsky)

Before I introduce you to the next topic let us consider the following scenarios.

Example 1

I came across a pahari child aged two-and-a-half years who when saw 'halwa' (pudding made out of flour, oil and sugar) kept with other things such as 'kumkum'- red smear (roli), red thread tied on wrist in religious ceremonies (mouli) and some money, started jumping and saying 'kanya', 'kanya' (young girl). In the beginning I could not understand what the child meant but after taking out a portion of halwa, when I kept the remaining in the kitchen, the girl who was following me, asked "why have you brought halwa here?" Again, when I went back to where halwa was kept with other things I asked her "What is this?" (pointing at halwa) she replied 'kanya'. This behaviour of the child was very intriguing and revealed how the child's mind functions. Though she could recognize 'halwa' as an eatable but when placed in a specific situation it acquired a different meaning- 'kanya' ('kanya gimana'- feeding young girls during 'asthami' or 'navmi' in 'navratras' – specific period during the year when Godess(es) is worshipped). When 'halwa' is placed (physically) in this context, it is 'kanya' for that child and when it is placed outside this context it is 'halwa' like any other eatable in the kitchen. I'm sure you will agree with me when I say 'halwa' acquired a different meaning when it was (placed) situated in a particular context. Objects acquire meaning from their context. Meanings are derived from the perception of context as a whole. I also found 'halwa' being referred to as 'prasad' by her at some other occasion. It is interesting to analyse how the child interpreted her experiences. The same object is evoking three different meanings in three different

settings even though physical sensation of 'halwa' remains the same. A lot of her cognition has also to do with her own cultural practices, which are part of her everyday life. These are her 'lived' experiences which have now become integral part of her thought processes and play many important role in her interpretation of daily life experiences. Who is assigning meaning to these experiences – the 'halwa', the place where it is kept, or the occasion - 'navratra', or her own mind set? Perhaps all put together. The meaning making process is spread over, distributed; is embedded in the whole situation including the cognizing child. Is sensory input alone the source of knowledge? Is knowledge conceived as "lived practices"?

Example 2

If a mark such as 13 is made and you are asked, "what is this?", what will be your answer? Most probably it will be either thirteen or B. If some one does not know English alphabets or has not undergone formal schooling but has seen bows and arrows, may roughly see this mark as a bow. Now consider a modified situation, i.e., given a list of number of items such as 15 tables, 200 chairs, 40 stools, and 13 carpets, it is not likely that the mark will be perceived as an alphabet B.

Likewise if some text in English is to be read then this mark will not be read as thirteen unless that text is also dealing with numbers. Similarly if figures of some implements such as sickle, plough, sword, gun etc. are drawn, then the same mark is likely to be seen as a bow. Now, the marks are the same, there is no change in the sensory input, but depending upon the situation in which these marks are found, meaning is constructed.

Check Your Progress 1

Note: Write your answers in the space given below.

1) Is meaning of an object or entity, independent of context in which it is situated? Substantiate.

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2) Write two examples from your life explaining situated cognition.

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Example 3

We engaged a Ph.D scholar to help us compile research abstracts in education conducted in our university. This scholar had a good working knowledge of computers but was a novice with regard to writing dissertation abstracts. Initially we assigned her the task of locating researches at various levels such as Master, M.Phil and Ph.D. She was then given some format for writing research abstracts along with specimen copies of research abstracts written by experts. Several sessions were then devoted to discussion, reviewing of abstracts prepared by her and providing

feedback. She was working with us; in the **community of researchers and research supervisors**. She was later required to make presentation of her compilation. Gradually she not only became independent in writing research abstracts but also was able to identify issues and variables to be investigated further, and research designs suitable for conducting different types of researches. Meanwhile, as we researchers learnt computer skills from her, the equation of **expert – novice** changed. In the beginning, she started her work at the periphery and we were at the centre but while learning about computers from her, we were at the periphery and she at the centre. This was an outcome of shift in the **communities of practices** – we as learners of computer skills were in a different community of practice where the research scholar was the expert. A single person may belong to several communities of practices at the same time.

Even though this scholar had successfully qualified courses in research methodology and education, in the beginning she was unable to perform the task independently. She was unable to apply theoretical knowledge to real situations. Did she learn her task by memorizing theoretical facts or by actively participating in the **community of researchers**? Many traditional ways of teaching result in "inert" knowledge in learners, or result in the inability of students to use what they know in relevant situations. Novices have difficulty solving complex, real world problems largely because they tend to memorize rules and algorithms in a decontextualized way. Experts on the other hand, succeed because of the situated nature of their knowledge.

1.4 SITUATED COGNITION

While reading about information processing approach (Unit 18, Block 5) to learning, you may have come across concepts such as 'declarative knowledge' and 'procedural knowledge' as separate schema, but in actual performance, the two cannot be separated and according to situative perspective, the two are integrated within a single framework.

Recent investigations of learning, however, challenge the separating of what is learnt from how it is learnt and used. Cognition is assumed to be social and situated activity (Kirshner & Whitson, 1997). One learns a single subject matter by doing what experts in that subject matter do (Lave, 1988). Thus it is argued that knowledge remains inert and unused if taught in contexts that separate knowing from doing.

The theory of situated cognition claims that every human thought is adapted to the environment, that is, situated, because what people perceive, how they conceive of their activity, and what they physically do develop together (Clancey, 1997). Furthermore, what people perceive, think and do develop in the fundamentally social contexts. The unit of analysis in situated cognition is sociocultural setting and the activities of the people are within it, rather than the individual mental functioning. Knowledge as lived practices must be understood in relation to the social aspect as well as the individual aspect.

We will now discuss the origin and theoretical framework of situated cognition.

Situated Cognition has its origin in the research studies where researchers have studied common people as to how they make sense of their surroundings, how they learn, solve problems, attain complex understanding, or acquire complex skills living in a community. For example, work on situated cognition, has focused on methods of price-comparison used by grocery shoppers, the ways in which dieters calculate their portions by physical manipulation, how milkmen figure out their deliveries using the constraints of the delivery boxes, the way Liberian tailors learn to sew through apprenticeship, and so on. The important aspect of research in situated cognition is that it starts from 'cognition' in daily life or daily practices of lay people in natural settings and has tried to come up with the theory accounting for learning in everyday life. Whereas other

theories of learning start from some preconceived assumption about learning and come up with a theory, for e.g., typical information processing researches focus on how experts make sense or solve problems or study 'cognition' in contrived situations. Research in the information processing tradition has generally focused on the kinds of tasks familiar to academics or other professionals; processes such as logical deduction, crypt-arithmetic, chess playing, disease diagnosis, mechanical faultfinding, and scientific discovery.

Situated cognition approach comes from studies in informal situation rather than formal situation. By studying cognition in real life it tries to come up with a theory for education where children acquire various skills naturally in the way a child grows in a community tacitly acquiring the norms, beliefs and skills of the community. Situated cognition starts from everyday practices to come up with the theory. Thus situated cognition view is often defined as "enculturation," or adoption of the norms, behaviour, skills, beliefs, language, and attitudes of a particular community. The community might be mathematicians or gang members or readers or teachers or students-any group that has a particular way of thinking and doing.

The emphasis of research on situated cognition is to study realistic, complex "situated" learning, problem solving and thinking. It can be viewed as a term for a family of research efforts that explain cognition, problem solving, sense making, understanding, transfer of learning, creativity, etc., in terms of the relationship between learners and the properties of specific environments. Situated cognition is a new field of research, which has given a fresh perspective in education.

Situated cognition is placed under "social constructivism"(which you will study in unit 19, block-5), which assumes 'knowledge' to be social construction as opposed to 'knowledge' being seen as personal construction. The terms "situated cognition", 'situated learning", "situated action," or "situativity" denote an array of related perspectives, falling under the broad umbrella of "socio-cultural constructivism."

However one important assertion, which characterizes situated cognition, distinguishes itself from social constructivism is that the situated cognition approaches are essentially based on an assumption that knowledge is inherently bound to the context i.e., knowledge is situated. Knowledge cannot be separated from the context; in fact it is embedded in the context. By assuming 'knowledge' as situated and context bound, 'learning' is also seen here as inseparably situated and context bound as exemplified in the afore mentioned scenarios.

Thus, situated cognition is a shift from traditional theories, which separated the cognitive structure from the activity embedded in specific context; a shift in learning theories from individual towards a social orientation, acknowledging that learning is always situated in a context. The idea of situated learning explains learning to be a social practice that must be understood through the ever-present relationships between participants, activity, and environment. According to this approach, it is not possible to separate cognitive tasks from social tasks, because all cognitive tasks have a social component.

1.4.1 Emergence of Situated Cognition Approach

The philosophical foundation of situated cognition can be traced to Dewey's philosophy. Situated cognition perspective can be better understood by comparing it to Cartesian philosophy. Cartesian philosophy assumes a fundamental division in the aspects of human behaviour. Primary is the assumption that the mind is isolated from the world and from the human body. The Cartesian dualism has been prevalent in psychology of learning theories virtually since their inception. For example in Behaviourism, learning theories give importance to the environment and negate the role of mind. Cognitive theories are focused on the mind of individual. Thus these traditional theories reinforce Cartesian dualism by trying to understand cognition in isolation. This dualism asks

students to absorb, not engage; to listen, not act; to theorize, not practice. The student's job is to absorb facts and ideas, not to experience ideas in action. This separation of ideas from action and of mind from the body violates the universal interrelatedness of all things. Situated approach to cognition rejects dualism of all kinds.

Situated cognition approach has its origins in diverse fields, including:

- Sociology of knowledge (Marx, Durkheim, Mannheim)
- Functionalism (anti-associationism) (Dewey, Bartlett)
- Activity theory (Vygotsky, Leontiev, Luria; Cole, Wertsch)
- Cybernetics and systems theory (Bateson, von Foerster)
- Ethnomethodology (Garfinkel)
- Ecological psychology (Gibson, Jenkins, Bransford, Neisser, Barker)
- Critical pedagogy
- Everyday Cognition

However, recently the origin of perspective is traced to the Piagetian and Vygotskian socio-cultural perspectives in learning. Piaget rejected the Cartesian model to propose that knowledge is situated in action. However, Piaget's theory is context neutral. Bruner's and Vygotsky's theories propose learning to be situated in the cultural context and situated cognition can be seen as the extension of these theories. Situated cognition has been positioned as an alternative to information-processing approach. It seeks to correct some of the oversights of the information processing approach to cognition.

Information processing assumes (mind/body dualism) thinking as something that goes on in the head without intimate physical interaction with the surroundings. The educational analogy of the above view is that students learn by passively sitting still and absorbing knowledge rather than by actively manipulating things and testing the results of their inquiries. Also in the present education system, knowledge is viewed as static, absolute, self-contained substance, theoretically independent of the situations in which it is learned and used. The goal of education is considered to be the transmission of this final, absolute, decontextualized, abstract knowledge from the head of someone who knows to the head of someone who does not; knowledge is seen as information transfer from the head of the teacher to the head of the learner. The context for learning is assumed not to matter.

From the information transfer view of knowledge, students everywhere are known to acquire knowledge-definitions, formulas, etc. where they don't know either how it is connected to daily life nor can apply it to any use. The knowledge acquired by student is inert, disconnected as you saw it in example 2. Such inert knowledge, cut off from real life, is due to the fact that the concepts taught in schools are devoid of any contextual support perceived as abstract entity, disconnected from real life (decontextualized). Conversely Situated Cognition does not see knowledge as an abstract entity and reject the idea that it is transferred automatically to other situations.

According to situated cognition there is no dualistic separation of mind and body. Manipulation of a thing affects the thinking and vice-a-versa. The perception and action are mutually shaping. Actively moving and manipulating things alter perception, (consider the example of 'halwa', or mark 13). Human beings basically function by integrating knowing and doing.

A common theme uniting many situated approaches to cognition is a shift in the way the person/environment relationship is conceived. Rather than a person being "in" an environment ("like a cherry in a bowl," as Dewey once put it), the activities of person and environment are viewed as parts of a mutually-constructed whole. Put simply, the

inside/outside relationship between person and environment is replaced by a part/whole relationship. For example 'halwa' is part of a holistic situation leading to the perception of 'kanya'. Knowledge is considered to be interrelated and connected to context or day-to-day life. For example physics is interrelated to all "school subjects" and is connected to our day-to-day existence. We can make sense of physics if we learn/practice it in context of real life. When you acquire knowledge with real life experience it is useful as opposed to inert, it is dynamic as opposed to static, it is connected as opposed to disconnected to real life. Knowledge in situated cognition is inseparable from the occasions and activities of which it is the product (Brown, Collins, and Duguid, 1989). And hence, education is a matter of learning to participate in a jointly constructed social activity rather than transmission from one head to another according to this approach.

In particular, Lave (1988); Lave and Wenger (1991) have rejected transfer models, which isolate knowledge from practice, and have developed a view of learning as social construction, putting knowledge back into the contexts in which it has meaning to give a new theory of learning called 'Situated Learning'. This view falls under Situated Cognition. Situated learning (Brown, Collins, & Duguid, 1989) is a stance holding that inquiries into **learning and cognition must take serious account of social interaction and physical activity.** Further, Lave describes cognition in situated cognition as "distributed — stretched over, not divided among-mind, body, activity and culturally organized settings (which includes other actors)".

Check Your Progress 2

Note: Write your answers in the space given below.

1) Elaborate on how designing of toys in physics is interconnected to other school subjects? (hint: language, maths, chemistry, geography, history, art and craft, etc) Reflect on any other such activity connected to real life.

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2) How is situated cognition approach different from other approaches to education?

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1.4.2 Concepts Associated with Situated Cognition

Many concepts have emerged in situated cognition research, which help in understanding knowledge, cognition and learning in natural settings. **Communities of practice, legitimate peripheral participation, authentic activities, and cognitive apprenticeship are a few of them.** These are also the concepts representative of situated cognition approach. The following section deals with these basic concepts.

a) **Communities of Practice**

"Communities of practice" is a unifying concept emerging from situated learning research — the idea that learning is constituted through the sharing of purposeful,

patterned activity (Lave & Wenger, 1991). **In essence, communities of practice are groups of people who share similar goals and interests** (Example 3), namely, community of scientists, community of workers, community of farmers, community of teachers etc. In the pursuit of their goals and interests, they employ common practices, work with the same tools and express themselves in a common language. Through such common activity, they come to hold similar beliefs and value systems.

We are members of several communities of practices at the same time, such as-member of family, school, class, neighbourhoods or a city. According to situated cognition approach when one starts participating in the activity of the community he/she starts learning about the practices of the community, their norms, values, beliefs. By virtue of our participation in the activity of the community and following their norms, values and beliefs, we become members of that particular community, be it community of farmers, manual workers, teachers, doctors, or any other such category. Lave argues that learning as it normally occurs in a community is a function of the **activity, context and culture** in which it occurs (i.e. it is situated). This contrasts with traditional classroom learning activities, which involve knowledge, which is often presented in an abstract and decontextualised form. Furthermore, situated learning is usually unintentional (incidental) rather than deliberate.

Communities of practice can be understood from the research work of Lave and Wenger, which provides a unique way to understand communities and their relationship to learning. Lave and Wenger reason from the perspective and standpoint of apprenticeship communities where community members have to learn the skills and language of the particular occupation, such as sailors, butchers, midwives, carpet weavers, people engaged in embroidery, basket, rug or chatai makers, potters, tea leaves pluckers, software engineers, etc. Research conducted by Lave and Wenger highlights the way new apprentices come to be old-timers in the community and the manner in which their identities are shaped as a process of learning the language and culture of the community. This work, which is often referred to as "situated learning," involves a community of practice where learning is intimately connected to desires, feelings, beliefs, identities, memberships and social interactions.

b) Legitimate Peripheral Participation

Lave and Wenger illustrate their theory by observations of different apprenticeships (Yucatec midwives, Vai and Gola tailors, US Navy quartermasters, meat-cutters, and non-drinking alcoholics in Alcoholics Anonymous). Initially people have to join communities and learn at the periphery. As they become more competent they move to the 'center' of the particular community. For example, at home we first engage children in the peripheral activities such as peeling peas, carrots, boiled potatoes; ask them to wash vegetables, fruits, help in laying the table etc. We don't straight away ask them to cook. Then gradually we allow children to help in stewing, boiling. They become members of community involved in cooking. We further induct them to more complex activity such as making chappaties, cakes, dishes etc. After sufficient 'apprenticeship' with the expert cook (whether mother or father), they become independent to take on the responsibility of cooking a meal. However to become an expert cook, they need further self-learning and practice. Similarly children learn to repair gadgets, clean cars, etc. There is movement from the periphery to the centre. Centre is where the expertise lies. This is what Lave & Wenger (1991) call the process of **'legitimate peripheral participation'**.

Legitimate peripheral participation (LPP) provides a way to speak about the relations between newcomers and old-timers and about activities, identities, artifacts, and communities of knowledge and practice. "A person's intentions to learn are engaged and the meaning of learning is configured through the process of becoming a full participant in a socio-cultural practice. This social process, includes, indeed it subsumes the learning of knowledgeable skills" (Lave and Wenger 1991).

LPP can be well understood if you reflect on how you have acquired many skills living in the community. Learning, from the viewpoint of LPP, essentially involves becoming an "insider." Learners do not receive or even construct abstract, "objective," individual knowledge; rather, they learn to function in a community—be it a community of nuclear physicists, cabinet makers, high school classmates, street-corner society, or, as in the case under study, service technicians. They acquire that particular community's subjective viewpoint and learn to speak its language. In short, they are enculturated (Brown, Collins, and Duguid 1989). Learners are acquiring not explicit, formal "expert knowledge," but the embodied ability to behave as community members.

Check Your Progress 3

Note: Write your answers in the space given below.

1) Make a list of communities you think you belong to. Also discuss the goals, norms, beliefs, identities, nature of interaction, etc in brief.

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c) **Authentic Activities**

As mentioned in the beginning, school practices assume that we can learn concepts independent of the situation in which they are experienced. School teaching assumes that science can be learned from science textbooks, history can be learned from history textbooks and English can be learned from English textbooks. As mentioned before, the basic assumption is that knowledge is abstract, decontextualized and can be transferred from the textbooks or teachers to students. The school teaching practices are a striking reflection of this assumption, where the teachers use most abstract teaching methodology, for example, reading from textbooks, lecturing. Relating the concepts to daily life or use is generally not done. Brown and his colleagues state that educators, who ignore the situated nature of cognition, defeat the very goal of providing usable, robust learning.

To give an example of how the teaching practices ignore situated nature of cognition is learning from dictionaries. Like any other method it tries to teach abstract concepts independently of authentic or real situations. It overlooks that understanding of any word develops through its continued use in real life situation. The meaning of a word cannot, in principle, be captured by a definition, even when the definition is supported by a couple of exemplary sentences. The meaning of word changes from one situation to another, from one culture to another, one region to another. And its meaning can be understood only in context. Words or language are essentially connected to context or they are embedded in context. People generally learn words in the context of ordinary, everyday conversations and not from dictionaries or prescribed textbooks. Study by Miller and Gildea indicate that the average 1-year-old can learn up to 5,000 words a year (13 per day) for over 16 years. The practice of teaching from dictionaries provides, at best, the possibility of learning about 100 to 200 words per year. This knowledge is soon lost if there is no contextual usage.

To illustrate, while trying to teach 'Hindi' to my younger daughter who was studying in school, we came across words such as *'jugali'* (tqxkyh) -chewing of curd by cattle, *'kingkartavyavimood'* *(fdadrZO;foew<+)* – roughly meaning –a state of dilemma. As she had never seen cow or cattle chewing curd, I tried to explain, "like one keeps

chewing gum for a long time". After I had finished teaching, I gave her a 'test' in which meanings of new and difficult words were asked. She was also required to make sentences using these words. She successfully completed the test, for example, she made a sentence – "Cow was chewing curd" (in Hindi of course), though her word meanings and sentence constructions were correct, yet I had a feeling that she did not grasp the essence of these words. So I asked her to write a short paragraph involving all the new words she had learned from those chapters. Her answer was a humorous eye opener. She wrote –"*meri badi bahen sara din jugali karti hai*" (my elder sister is chewing curd the whole day), another sentence was "when my brother got hurt, my father became k*ingkartavyavimood* (she wrote in Hindi). Though I am basically a science teacher, I have very good insight about how language should be taught, what does it mean to know word meanings. Children may provide 'correct' word meanings based on learning from dictionary and may also be able to make correct sentences using these words but they may lack understanding of how these words can be used in context; vice-versa, what these words mean in different contexts. Do words convey word meanings based on 'objective' dictionary meaning or words evoke meaning depending upon the context in which they are used? Recall your experiences when you were asked to provide meanings of some unfamiliar words. You may have invariably responded, "read the whole sentence, ... read the whole paragraph" – before you could ***construct*** meaning of those words.

According to Brown et al. all knowledge is like language, which can be understood only in a context. And knowledge is like a tool. Knowledge or concepts like language evolve with each new occasion of use, because new situations, negotiations, and activities re-situate it in a different form. Thus a concept, like the meaning of a word, is always under construction. This would also appear to be true of apparently well-defined, abstract technical concepts.

When we actively use our tool (knowledge) in real life situation we understand it better or can use it more effectively. So if we consider knowledge as tool, which can be sharpened with its continuous use in daily life, learning can be a continuous life-long process resulting from context-based instruction. A context-based instruction would mean providing students with context for learning. Authentic work practices are one such method to provide meaningful learning.

Authentic work practices or authentic activities are based on daily life practices or activities in which learners engage. Such activities have a greater resemblance to activities in which core members of a community actually engage. For example, authentic science teaching-learning environments would allow students to practice science as scientists work on research projects in real life. Working on projects with genuine purpose or cause will constitute science learning according to situated cognition. Like, working on a project to study the soil and kind of vegetation in nearby area, working on project to make organic manure in school for sale to nearby kitchen gardens, cultivation of mushroom, making of handicrafts, running a canteen, using demographic data, teaching illiterates or young children to read and write.

Beverly Caswell and Mary Lamon's (1998) study on grade four students provides an example of authentic work practices. Madagascan Giant Hissing Roach was the focus of a ten-week study in Caswell and Lamon's classroom. The class carried investigations on this roach, exploring concepts of adaptation and evolution, which are central concepts for understanding biology. Students were given an opportunity to become immersed in the culture of scientific inquiry. The researchers wanted their classroom to operate similar to the way scientific community operates. The study illustrates children working collaboratively on a range of learning tasks including initiating investigations and communicating findings. The idea was that learning environments in which children are given multiple opportunities to reflect on their ideas, compare perspectives and become aware that they are constructing knowledge as a group as well as individually can foster extraordinary learning for all students. There was remarkable improvement in learning, understanding and interactions of students with peers and teachers.

d) Cognitive Apprenticeship

Cognitive apprenticeship methods try to enculturate students into authentic practices through activity and social interaction. Cognitive apprenticeship is a synthesis of formal schooling and traditional apprenticeship. In formal schooling, the processes of thinking are often invisible to both the student and the teacher, like in comprehending an essay. In traditional apprenticeship, the expert makes the processes of the learning activity visible to the apprentice. For example, a master carpenter demonstrates the use of a lathe. The goal of cognitive apprenticeship is to make the thinking processes of a learning activity visible to both the students and the teacher. The important features of this method are emphasis on social interaction and collaborative learning.

Advanced graduate students in humanities, the social sciences, and the physical sciences acquire their extremely refined research skills through the apprenticeships they serve with senior researchers. It is then that they, like all apprentices, must recognize and resolve the ill-defined problems that emerge out of authentic activity, in contrast to the well-defined exercises that are typically given to them in textbooks and on exams throughout their earlier schooling. It is at this stage, in short, that students no longer behave as students, but as practitioners, and develop their conceptual understanding through social interaction and collaboration in the culture of the domain, not of the school.

In cognitive apprenticeship, instructors model the strategies and activities necessary to solve problems such as thinking aloud - 'speaking out thinking' while solving a problem; while providing appropriate scaffolds (organizational strategies and other supporting materials) to support the students' own efforts. Coaching and correction are provided as the students work on increasingly complex problems, and then support is withdrawn as the students develop competency.

In essence, cognitive apprenticeship attempts to promote learning within the nexus of activity, tool, and culture. Learning, both outside and inside school, advances through collaborative social interaction and the social construction of knowledge. It has been pointed out that throughout most of their lives people learn and work collaboratively, not individually, as they are asked to do in many schools. Lampert's and Schoenfeld's work, Scardamalia, Bereiter, and Steinbach's teaching of writing (1984), and Palincsar and Brown's (1984) work with reciprocal teaching of reading, all employ some form of social interaction, social construction of knowledge, and collaboration.

Let us conclude in brief what we have discussed in this section. Situated cognition theory of learning contains several components related to teaching and learning. **Community of practice,** a concept emerging from situated cognition which emphasizes sharing and doing, construct meaning in a social unit (Roschelle, 1995), the use of **authentic** setting (Winn, 1993) **activities** (Brown, *et al.*, 1989) tasks that take place in real-world setting and allowing novice workers to observe and model expert behavior to attain mastery and understanding (Bruer, 1993; Perkins & Salomon, 1989), gradually increasing the level of individual participation in group activities, i.e., **legitimate peripheral participation** (Lave & Wenger, 1991; Scribner, 1985), and use of ill-structured settings to enhance the possibilities of learning transfer (Berryman & Bailey, 1992; Cormier & Hagman, 1987; Lave, 1988). The notion of **cognitive apprenticeship** is related to situated cognition theory and simulates or capitalizes on real-world activities (Berryman & Bailey, 1992; Brown, *et al.*, 1989; Collins, Brown, & Newman, 1989; Collins, *et al.*, 1991).

Now, we are in a position to identify the principles of situated cognition.

Principles of situated cognition are:

1) Knowledge needs to be presented and learned in an authentic context, i.e. settings and applications that would normally involve that knowledge.

2) Learning requires social interaction and collaboration.

The principles of situated cognition/learning can be applied to designing effective learning environments. The most appropriate instructional method will be one that incorporates both:

a) Realistic presentation of the knowledge, procedures, and skills and

b) Opportunities for students to apply the knowledge and practise the procedures and skills in a realistic context.

Check Your Progress 4

Note: Write your answers in the space given below.

1) Give examples from your own life as to how you gained a particular skill from an expert in that field as explained in cognitive apprentice, or through learning in Community or with peers to accomplish a task. (hint: while working in co -curricular activities, science exhibitions, etc)

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2) Take up any authentic task and highlight how different skills can be developed collaboratively.

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1.5 TYPES OF LEARNING

When you say to someone that you have learnt to drive a car, what do you mean by it? Do you think learning to drive a car and learning to calculate the area of a triangle are the same type of learning? Think of all that learning you have done in your life. Are they all similar in nature? Some educationists have tried to categorize learning into different types by using the concept of domain.

Domains of Learning

Benjamin Bloom (1956) developed a taxonomy to differentiate the levels of complexity of learning. He classified learning into three domains:

- Cognitive domain,
- Affective domain, and
- Psychomotor domain.

Cognitive Domain

Cognitive domain pertains to intellectual knowledge, skills and abilities. There are six levels of learning proposed in Bloom's taxonomy based on increasing levels of complexity.

- Knowledge
- Comprehension
- Application
- Analysis
- Synthesis and
- Evaluation

Knowledge

This category involves recall of specific information, definition, principles, generalizations, facts etc. It also involves the ability to classify, organize, sequencing, developing criteria etc.

Comprehension

Comprehension is the ability to understand the verbal, pictorial or symbolic form, distinguish, and explain concepts or predicting consequences of an action.

Application

Application involves the ability to apply knowledge to real situation. At this level of learning, children are able to demonstrate their ideas. This means the learner is able to use abstractions, such as ideas, principles, rules, methods or theories to solve a problem in a particular situation.

Analysis

It is the ability to classify or breakdown ideas / theories / principles / material into constituent parts and explain / clarify the relationship between parts. For example, analyzing a report to identify assumptions, motives, hypotheses or facts from conclusion or analyzing a piece of communication to determine the relationship between its different parts.

Synthesis

It is the ability to put together parts and make something new or form a whole. At this level of learning one is able to bring ideas together and put forward a revised interpretation or a new theory. This is going beyond the past knowledge and developing something new.

Evaluation

It is the learning of value judgments. Children develop the ability to judge the value or worth of a material, idea or method. They learn to set standards for judgment and examine them based on criteria.

Affective Domain

Like cognitive domain, affective domain too is divided into a hierarchical taxonomy (Krathwohl, Bloom, and Masia, 1964). In affective domain the focus is on emotions and attitudes. There are five levels of the affective domain.

- Receiving (Attending)
- Responding
- Valuing
- Organization
- Characterization by a Value or Value Complex

Receiving (Attending)

Exhibition of awareness or consciousness of an affect or value (e.g., awareness of aesthetic factors); willingness to receive a communication (listening to others speak); and controlled or selected attention given to affects or values (discrimination of mood in music; alertness toward human values recorded in literature).

Responding

Paying active attention or expressing interest through acquiescence in responding (obedience or compliance); willingness to respond (voluntary participation, acceptance of responsibility); or satisfaction in response (enjoyment of self-expression, conversation, or reading).

Valuing

Adoption of consistent behavior that reflects an independent assessment of worth or a characteristic attitude. It includes acceptance of a value to the point of being identified with it (continuing desire to speak effectively); pursuit of or preference for a value (active participation in making arrangements for an art show); and commitment or conviction (devotion to ideas of democracy).

Organization

Gradual development toward a system of values in which interrelationships and predominance of particular values are determined. Includes conceptualization of a value held (identifies attributes of an admired object, forms judgments as to the responsibilities of society); and organization of a value system in which values are in a dynamic equilibrium (weighs alternative policies with the criterion of the public good).

Characterization by a Value or Value Complex

Development of a life outlook characterized by an internally consistent set of values. It includes a generalized set or selective response at a very high level (readiness or predisposition to revise judgments in light of evidence); and characterization by a philosophy of life or view of the universe (development of a code of behavior based on ethical principles consistent with democratic ideals).

Source: John W. Wakefield, *Educational Psychology: Learning to Be a Problem-Solver*. Houghton Mifflin (1996) Company. As cited in Parsons, R.D., 2001.

Psychomotor Domain

This category of learning involves physical ability. Psychomotor domain has also been classified using a taxonomy (Harrow, 1972). Five levels of the taxonomy are described here.

- Basic-Fundamental Movements
- Perceptual Abilities
- Physical Abilities
- Skilled Movements
- Nondiscursive Communication

Basic-Fundamental Movements

At this level, the learner develops basic locomotor movements(walking, running, jumping, hopping, rolling, climbing), nonlocomotor movements(pushing, pulling, swaying, swinging, stooping), and manipulative movements(handling, gripping, grasping, manipulating).

Perceptual Abilities

These include auditory perception (following instructions), visual perception (dodging a moving ball), kinesthetic perception (adjusting body in a handstand), tactile perceptions (determining texture, identifying coins through touch), and coordinated perceptions (jumping rope, punting, catching).

Physical Abilities

Included in it are- endurance or strenuous effort (distance running, swimming), strength or muscular exertion (weightlifting, wrestling), flexibility or axial movements (toe touching, sit-ups, twisting exercises, ballet exercises), and agility or quick, precise movements (shuttle run, typing, dodge ball).

Skilled Movements

A physical skill is defined as the "degree of efficiency in performance of a specific, reasonably complex movement behavior" (Harrow, 1972, p. 75). The complexity of a skill distinguishes it from basic-fundamental movements. Activities include three types of skills used in sports, dance, recreation, and manipulation in three categories (simple, compound, and complex adaptive skills). Simple adaptive skills refer to adaptations of basic-fundamental movements (sawing as an adaptation of push-pull, waltzing as an adaptation of walking, piano playing, archery skills, typing and clerical skills, handicrafts, industrial skills). Compound adaptive skills require skill in the simultaneous manipulation of a tool or implement in addition to skill in use of the body (racket games). Complex adaptive skills require mastering the mechanics of total body involvement (aerial gymnastics stunts, complex dives). Each of the three types of skilled movements is further subdivided into four levels of proficiency (beginner, intermediate, advanced, highly skilled).

Nondiscursive Communication

This level of movement involves communication through bodily movements from facial expressions to dance compositions. Its two subcategories are expressive movement (posture and carriage, gestures, facial expressions) and interpretive movement (art forms of aesthetic and creative movement). The expressive movements are modified, exaggerated, and utilized in movement interpretations by highly skilled athletes, fine arts students. and even children (the ability to design one's own series of movements in free response activities).

(***Source:*** John W. Wakefield (1996). *Educational Psychology: Learning to Be a Problem-Solver.* Houghton Mifflin Company. As cited in Parsons, R.D., 2001).

Learning Outcomes

Robert Gagne (1985) employed a more cognitively oriented approach to conceptualizing learning. Gagne proposed that the interaction between the environmental stimuli and the cognitive states and processes of the child used in interpreting the environmental stimuli leads to learning outcomes. Gagne identified of the following outcomes of learning:

- Verbal learning
- Intellectual skills
- Cognitive strategies
- Attitudes
- Motor skills

Verbal Learning

When children respond to questions like, Who is the prime minister of India?, What is the name of the first president of India? When did India become an independent country?, they show verbal learning. For the development of higher order intellectual skills children would need verbal information in the form of facts and principles.

Intellectual Skills

Gagne categorized **intellectual skills** into three forms such as:

- Discrimination learning
- Concept learning
- Rule learning

Discrimination Learning

Discrimination learning is about distinguishing objects based on their recognizable properties. For example, children show discrimination skills when they learn to differentiate between the letter **b** and the letter **d** or a cat from a puppy.

Concept Learning

In concept learning one learns to group objects, events or ideas. Children show concept learning when they recognize different types of dogs. When concepts are combined to form more abstract groupings, Gagne called them 'defined concepts'. Such concepts can be defined in terms of other concepts. For example, terms like socialism, democracy and honesty can be defined by reference to other concepts.

Rule Learning

Rule learning is the third intellectual skill described by Gagne. We show rule learning when we stand in queue at a cinema counter. When children speak grammatically correct sentence they display rule learning. In math class when children demonstrate that the product of two negative numbers is a positive number, it is a rule learning. However, concept learning or rule learning does not make the learner able to define the concept or state the rules.

Cognitive Strategies

Cognitive strategies refer to the capability of the child to internally organize skills that regulate the use of concepts and rules (Gagne, 1985). These strategies help children to organize their cognitive processes effectively.

Attitude

Attitude is an acquired internal state that influences a student's choice of personal action (Gagne, 1985). Children may acquire an attitude towards parents/ teachers that influences their behaviour at home or in school.

Motor Skills

Another type of learning outcome proposed by Gagne is motor skills. Playing tabla or riding a cycle involves physical capabilities. In such activities both cognitive and affective processes are involved. The child may have a schema of how *tabla* is played as well as a predisposition to liking it or not.

Generalization

It is the ability to arrive at a conclusion on the basis of a limited number of observations about the characteristics of a large group. Children may learn to generalize in social settings or in experimental settings. In certain cases learning happens as a result of transfer of past learning (generalizing from the past knowledge to fit it in a new situation) to solve a new problem. For example, driving a two wheeler may enhance the learning of driving a four wheeler.

The Four Pillars of Education

The UNESCO report (1996), **Learning: The Treasure Within**, proposed that education must be organized around four fundamental types of learning which, throughout life, will in a way be the pillars of knowledge: **learning to know, learning to do, learning to live together and learning to be.**

In **Learning to know,** we combine a sufficiently broad general knowledge with the opportunity to work in depth on a rather small number of subjects. This is also called learning to learn, as one benefits from the opportunities education provides throughout life.

Learning to do, requires one to acquire not only an occupational skill but also, more broadly, the competence to deal with many situations and work in teams. It also means learning to do in the context of young peoples' various social and work experiences which may be informal, as a result of the local or national context, or formal, involving courses, alternating study and work.

Learning to live together is acquired by developing an understanding of other people and an appreciation of interdependence-carrying out joint projects and learning to manage conflicts-in a spirit of respect for the values of pluralism, mutual understanding and peace.

Learning to be enables one to develop one's personality and be able to act with ever greater autonomy, judgement and personal responsibility. In this connection, education must not disregard any aspect of a person's potential: memory, reasoning, aesthetic sense, physical capabilities and communication skills.

Check Your Progress 5

Note: Write your answers in the space given below.

1) If you are a teacher make a note of the kind of learning experiences you provide to your students based on domains of learning and Gagne's outcomes of learning.

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2) Examine the content of a textbook and identify the nature of the learning experiences as organised in the curriculum.

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3) Describe the ways in which you will organise learning experiences for school children as stated in the four pillars of education.

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1.6 LET US SUM UP

In this unit, we have discussed the evolution of the concept of learning from different theoretical perspectives. Behaviourism holds the view that learning is change in behaviour due to experiences. According to cognitivists, learning is acquisition of knowledge, comprehension, skills etc. Constructivist like Piaget argued that learning is a process of knowledge construction. Vygotsky, a social constructivist, proposed an alternative view to Piaget's theory of knowledge construction. For Vygotsky, learning is a social process of knowledge construction and does not take place merely due to being at the different stages of development and in isolation from the socio-cultural settings. Researches recognized the important role of context in the process of learning. We have another well developed perspective of situated cognition or learning in vogue now. Situated cognition is placed under social constructivism, which assumes knowledge to be social construction as opposed to knowledge being seen as personal construction. Situated cognition approaches are essentially based on the assumption that knowledge is inherently bound to the context i.e., knowledge is situated. Some of the concepts associated with situated cognition are communities of practice, legitimate peripheral participation, authentic activities and cognitive apprenticeship. We have also discussed different types of learning. We have examined three domains of learning and the taxonomy by Bloom, the cognitive, affective and psychomotor. We also discussed Gagne's outcomes of learning which are verbal information, intellectual skills, cognitive strategies, attitudes and motor skills. The four pillars of education include learning to know, learning to do, learning to live together and learning to be.

1.7 UNIT END EXERCISES

1) Discuss the concept of learning pointing out the fundamental differences between different theories of learning.

2) Observe the classroom teaching of two or three of your colleagues and analyse their theoretical orientation regarding the concept of learning.

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