UNIT 2 EDUCATION AS A FIELD OF KNOWLEDGE

Structure

2.1 INTRODUCTION

Human knowledge–its nature, sources, types–has been a favourite area of interest to philosophers since ancient times. The result has been the emergence of the important branch of philosophy, i.e. epistemology. Epistemologists, historically, have concerned themselves with such questions as What is knowledge? How do we acquire knowledge? Is knowledge one or many? What is the structure of knowledge and what are its logical categories and so on. Philosophical findings on these epistemological issues will surely have theoretical and practical ramifications on the different aspects of education, in particular to the body of knowledge that "education" represents. Especially important for understanding the nature of education is a probe into the structure of knowledge and its logical categories. In this connection, we face such questions as: What does education as an area of intellectual study deal with? Is education a science or art? What is an educational theory? How does it differ from a scientific theory? And so on. Surely, these cannot be answered without reference to philosophical work on the composition and structure of knowledge and its different forms. This unit attempts to discuss the concept and structure of knowledge and disciplines, forms of knowledge, status of education as a discipline, its characteristic attributes and so on.

2.2 OBJECTIVES

After going through this unit, the learner should be able to:

- explain the structure of knowledge and discipline and their implications for curriculum design;

- discuss different forms of knowledge and their basic structure;
- differentiate between basic and applied disciplines;
- analyse the status of education as a discipline;
- analyse the role of other disciplines in education;
- discuss the criteria of the educative process; and
- explain the cognitive and social requirements of education.

2.3 CONCEPT AND MEANING OF KNOWLEDGE AND DISCIPLINE

2.3.1 Nature of Knowledge and Discipline

Knowledge is the sum total of man's interactions with his environment and his interpretations of the same. It is not a unified whole but constitutes different approaches to the understanding of life. Different approaches to classification of knowledge suggest different aspects of the process of knowledge acquisition and hence their significance to the curriculum planner. These classifications and categorizations have been characterized differently by different philosophers as 'disciplines', 'forms of knowledge', 'realms of meaning' and so on.

A discipline is an organized body of knowledge with a logical structure. It is a network of concepts and generalizations which explain the relationships among a body of facts. Man learns by seeing relationships among different events and processes, by generalizing about them. He sees relationships among different facts and events with the aid of concepts and conceptualizes by classifying. We link concepts belonging to a class together and form conceptual network of systems. It is these conceptual schemes that constitute disciplines. A discipline is an organized body of knowledge, characterized by a domain, a method and a tradition.

A discipline is characterized by its structure. First, it has a domain, a field of phenomenon (subject matter), with which it deals. This may refer to different aspects of reality – scientific, logical (science and mathematics) exclusively or with different degrees of overlapping. Secondly, every discipline has its own method and mode of inquiry and also accepted set of rules by which to validate it. The rules of one discipline cannot be applied to other. Thirdly, a discipline has a history. The effect of history or tradition of a discipline is to define to some degree the domain and rules and philosophy of that discipline. The detailed explanation of a structure of a discipline is as follows.

Knowledge is produced by a variety of disciplines. As mentioned already, each discipline operates upon a domain. Not only has every discipline a domain, but every theory within a discipline also has a domain, the objects upon which the intellectual operations of the researchers are carried out. For example, the biological theories are concerned with the organization and movement of matter in living systems. The domain of high energy physics involves the behaviour of nuclear particles. The domain of learning theory encompasses the behaviour of people confronted with stimuli and verbal problems. It is necessary to note that the domain of an academic discipline is quite distinct from the knowledge produced by that discipline. 'Knowledge' may be regarded as the set of assertions or verifiable truth-claims which researchers in the discipline have cumulatively built up about the domain. The practitioners of the discipline operate upon the domain by means of a **substantive structure** and a **syntactical structure.**

The substantive structure of a discipline is the interrelated collection of powerful ideas that guide research in a discipline.

The syntactical structure of a discipline is concerned with issues such as the way in which new substantive concepts are formed and the ways in which different kinds of knowledge statements generated by the discipline may be validated. In short, it is concerned with the modes of thinking and reasoning used in the discipline.

Knowledge is also the product of a social structure. Although it is the individual scientist or a social theorist who acts as the creator of new ideas in the discipline, it is the function of groups of scientists/ social scientists to critically assess these ideas and decide whether or not to incorporate them into a discipline.

In short, disciplines involve groups of creative people who interact with one another. Disciplines are not simply the products of rational machines. The production of knowledge within a discipline has psychological, sociological as well as logical aspects.

2.3.2 Categories of Knowledge

'Knowledge' (or its generic word 'know') is used in a variety of ways and this suggests that knowledge may be of different types. Leaving aside the mystical interpretations of knowledge, the standard analysis of 'knowledge' suggests that one can distinguish three types of knowledge. Propositional knowledge ('knowledge that' or knowledge of what is expressed in true statements), procedural knowledge (knowledge 'how' or knowledge of how to do things) and direct knowledge (knowledge of persons, one's own mental states). Basic to the three types is propositional knowledge, and it is to this type of knowledge that the structure of knowledge question is addressed.

What exactly are the structural features of this domain of knowledge? Is it one complex body of inter-related concepts, a unity, or is it a diversity of logically distinct 'forms'? If it is the latter, how many such forms are there and what is the basis on which they are distinguished?

That propositional knowledge is not all of one logical type no one would seriously dispute, but the actual number of such logically different knowledge 'forms' is still a contentious issue. Let us consider, for illustration purposes, the propositions of mathematics and physical science. A proposition can be looked at in two ways, from the point of view of whether it contains any factual content and from the standpoint of the criteria employed for deciding its truth or falsity. In the first class, we have propositions like "sodium chloride dissolves in water" which give us factual information (synthetic propositions) and also those like "bachelors are unmarried people" that simply analyze the meaning of the words used (analytic propositions). From the standpoint of criteria, we have propositions whose truth can be decided only with reference to observation and verification of facts (a *posteriori* propositions) and those whose truth or falsity can be decided by pure reason without recourse to verification with experience (a *priori* propositions). It can be clearly demonstrated that mathematical knowledge is of the analytic or a priori type and scientific knowledge is of the synthetic or a posteriori type.

Encouraged by this clear-cut logical distinction between propositions of science and mathematics, and its consequences for teaching and curriculum, several philosophers of education have addressed themselves to the question of identification of the different forms of knowledge and designing a curriculum on that basis. One of the most influential theories in this regard has been put forward by the Cambridge Professor of Education, Paul H. Hirst.

Hirst's thesis is that the domain of human knowledge can be differentiated into a number of logically distinct 'forms' none of which is ultimately reducible in character to any of the others, either singly or in combination. According to him, there are seven such forms: formal logic and mathematics, physical sciences, the human sciences including history, moral understanding, religious knowledge, philosophy and aesthetics. The features that distinguish these different forms are:

1) They involve certain central concepts that are peculiar to the form. There are different types of concepts that characterize different forms of knowledge.

2) They have distinctive logical structures. The concepts occur within different networks, where relationships determine what meaningful propositions can be made.

3) They have distinctive criteria for truth in terms of which their propositions are tested.

4) They have developed particular techniques and skills for production of true propositions.

Check Your Progress

Notes: a) Write your answer in the space given below.

b) Compare your answer with those given at the end of the unit.

1. What is a discipline?

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2. Differentiate between substantive structure and syntactical structure.

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3. How can knowledge be categorized?

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2.4 TYPOLOGY OF FORMS OF KNOWLEDGE OR DISCIPLINES

2.4.1 Basic Discipline

Discipline is a form of learning that is structured in terms of a single type of truth criterion and a determinate methodology that is derivative from it. Each discipline has its own network of concepts which are distinctive and unique in nature. Such disciplines can be categorized as Basic Disciplines, which have their own logical structure of knowledge. For example, mathematics is a form of basic discipline where the concepts are abstract in nature, and the test of truth criterion that can be used is deducibility within an axiom system.

The discipline of science consists of its own concepts, facts, principles, generalizations, laws and theories which refer to the sensible world and are empirical in nature. Here observation is employed as the truth criterion for verification of knowledge. Science is an organized body of knowledge that has been systematically built in order to understand nature and nature's laws. This total body has been divided into numerous scientific disciplines of more specialized characteristics like Physics, Chemistry and Biology.

The human sciences include our awareness and understanding of our own and other minds, and include concepts that are essential to interpersonal relationships. Some of the human sciences are Sociology, History, Anthropology, Psychology and so on.

Similarly, philosophy as a basic discipline which was also considered earlier as the 'Mother of all Sciences' includes concepts which are irreducible in nature and have serious claims to independent status.

Hirst's schema of forms of knowledge along with the nature of concepts, tests of truth and examples of propositions are given in the following table.

Forms of Knowledge	Nature of Concepts	Tests of Truth	Examples of Propositions
Formal logic, maths	Concepts that pick out relations of a general abstract kind.	Deducibility within an axiom system.	"The base angles of an isosceles triangle are equal".
Physical Sciences	Concepts that ultimately refer to the sensible world.	Test of observation	"At constant temperature, the volume of a gas varies inversely with its pressure".
Our awareness and under-standing of our own and others' minds (History and Human Sciences)	Concepts essential to interpersonal relationships and knowledge like 'believing', 'deciding', etc.	Judgement of our own states of mind.	"Failure of the league of nations led to the Second World War".
Moral awareness and judgements	Ought, duty, good...	Serious claims to independent status, irreducibility	"It is one's duty to abide by Dharma".

Forms of Knowledge	Nature of Concepts	Tests of Truth	Examples of Propositions
Aesthetic experience	Forms of symbolic expression not confined to the linguistic.	Serious claims to independent status, irreducibility.	"The universe aches for expression in its endless rhythm of lines, colours, music and movements".
Religious experience	Distinct concepts, irreducibility.	Serious claims to independent status, irreducibility.	"Jnana, Bhakti and Karma are different steps to secure the Grace of God".
Philosophical Understanding	Unique second order concepts	Serious claims to independent status, irreducibility.	"Substance and its attributes are externally related".

Source: Hirst (1974).

Such a characterization of knowledge opens up a number of questions and arguments. The sociologists of knowledge fundamentally disagree with any attempt to explain knowledge purely in terms of epistemological considerations without emphasizing the social determinants. Hirst's categorization has been criticized for his excessive stress on the cognitive aspects of discipline and his characterization of art, morals, religion as propositional knowledge. Hirst's number of forms of knowledge and their discernibility have also been criticized. Certain forms of knowledge like philosophy, ethics and religion were considered to be too abstract to be learnt. But Paul Hirst was not ready to accept this criticism. For him, however abstract a field of knowledge may be, it is the question of teaching strategy involved that matters in teaching a subject. He argued that the liberal education of a rational person involves initiation into all those forms of

knowledge, which would give curriculum the necessary breadth and also act as an antidote for narrow specialization. He stressed that understanding of the logical grammar of a subject is essential (besides the psychological principles underlying the learning process).

While one may disagree with a particular categorization of knowledge, the important epistemological finding that propositional knowledge can be classified into distinct domains characterized by their logical structure can in no way be overlooked in the practice of education. Acquisition of knowledge and understanding in any school subject is not a matter of collecting facts and information. It is more importantly, a matter of understanding its logical structure.

The forms of knowledge given in the table can be classified as follows:

a) Distinct Disciplines or Forms of Knowledge: Mathematics, Physical Sciences, Human Sciences, History, Religion, Literature, Fine Arts and Philosophy.

b) Fields of Knowledge: Theoretical, Practical (these may or may not include elements of moral knowledge).

It is the distinct disciplines that basically constitute the range of unique ways we have of understanding experience to which moral knowledge may also be added. Although the domain of human knowledge is regarded as a number of logically distinct forms based upon the nature of concepts and experiences involved, it is said by Hirst that for many purposes, we deliberately and self-consciously organize knowledge with a large variety of fields which often form the units employed in teaching.

2.4.2 Applied Disciplines or Fields

The applied areas are those wherein the knowledge of basic disciplines are used. For example, scientific and industrial knowledge is used in technological applications. The areas of bio-engineering, bio-technology, applied physics, environmental biology, medical sciences are some of the examples of applied areas. Meteorology, oceanography and space science may be grouped with the earth sciences, like geology, ecology, mineralogy and environmental science which by the application of methods and principles used in mathematics, physics, chemistry and biology describe the earth and its environment.

Although the domain of human knowledge can be regarded as composed of a number of logically distinct forms of knowledge, we do, in fact, for many purposes, deliberately and self-consciously organize knowledge into a large variety of fields which often form the units employed in teaching science.

Apart from this, as knowledge advances, new specializations are born with their roots in basic disciplines and merge with other relevant areas.

2.4.3 Multidisciplinary and Interdisciplinary Areas

A more recent approach is to utilize one discipline or several disciplines as a centre for organizing curriculum. For example, the structure of the Economics discipline might form the skeleton. Concepts from the other social sciences would be utilized to flesh out the skeleton and to enrich both the study of social sciences and also the study of economics. This is an interdisciplinary approach in which one discipline serves as the principal organizer, with related disciplines serving as vital adjuncts, yet supplemented to the principal organizer.

A multidisciplinary approach occurs when structure or concepts are selected from various disciplines to create a new field of study. The new field results from intermingling the abstracted concepts and is independent of the separate disciplines from which it was formed. For example, the area of environmental education requires the use of biology, geography, geology, physics, chemistry and education. Similarly, the area of population education requires the use of biology, economics, psychology,

sociology, geography and so on. There are many other areas, which are multi-disciplinary in nature like Home Economics, Home Science, Social Biology, etc.

Check Your Progress

Notes: a) Write your answer in the space given below.

b) Compare your answer with those given at the end of the unit.

4. Distinguish between basic discipline and applied discipline

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5. What is a multidisciplinary approach?

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2.5 STATUS OF EDUCATION AS A DISCIPLINE

Various experts consider education as multi-disciplinary in nature for reasons, which are discussed here.

There are educational problems varying considerably in scope and complexity, but there is no set of specifically educational techniques and procedures with which to tackle these problems. It is necessary to have recourse to one or more of the underlying disciplines such as psychology, sociology, history and philosophy. For example, it is argued if one is investigating into the intelligence of a child, how can psychology be avoided? Similarly, when one is enquiring into the role and function of head teachers, how can sociology be avoided? If the concern is to lay down a curriculum for general secondary education, how can philosophy be avoided?

Philosophy as a discipline with its tools helps in analyzing educational concepts, theories and providing justification. It examines critically and seeks to clarify the concepts that are used in Education. Apart from this, Education makes use of different philosophical approaches like naturalism, pragmatism, idealism and so on to draw relevant implications to pinpointed problems like discipline and punishment in the classroom, freedom of learners, teaching and learning. Similarly, while planning curriculum and instruction, and to understand learners' intelligence, emotional dimensions, behaviour, etc. the discipline of Psychology becomes useful. The Sociological aspects are considered while viewing school as the sub system of the society, socialization of the child, impact of society on school curriculum and the learner. Thus we have the areas like Philosophy of Education, Psychology of Education, Sociology of Education, History of Education and Economics of Education.

However, there is totally a different viewpoint that considers Education as a discipline, which is as follows.

The practice of education is surely a discipline. Some ways of educating are preferable to others; there must be rules distinguishing the better from the worse practices and enjoining us to choose the better. Educational skill, is, furthermore, not instinctive but rather the product of training and experience, leading to a mastery of these rules. Such training and experience, as well as the finished art of the master teacher, serve, finally, to discipline the educator as all art disciplines the artist, through the continual

challenge to exercise discretion and judgement, patience and foresight, to sacrifice himself in the quest for excellence, to perfect his understanding and love of his material (Scheffler, 1973).

This account of the practice of education is certainly plausible. Yet it does not have the slightest tendency to establish the fact that the practice rests upon some autonomous branch of knowledge distinctive to it.

That educational skill is a result of training and experience may provide another reason for holding the practice of education to be a discipline. It gives no support, however, to the supposition that there must be a distinctive branch of science underlying the practice. Medical skill is a product of training and experience, though it draws upon a host of intellectual disciplines. That medicine is a practical discipline does not imply the existence of a unique science of medicine.

Let us then resolve to speak here of theoretical disciplines exclusively–of branches of knowledge or bodies of science. Each such discipline, it may be said, strives to offer a complete, systematic account of some realm of things in the world. It seeks a comprehensive body of true principles describing and explaining the realm it takes as its proper object. The realm of physical things is the object of the discipline of Physics, whose province thus embraces all significant truths concerning physical objects.

Consider now the realm of things involved in educational processes: schools, subjects, ideas, social practices and traditions, students, teachers, methods and curricula. Surely this important realm must form the proper object of some single theoretical discipline comprehending all significant general truths about the processes of education. Unless we are to abandon the assumption that the world is ordered, we must suppose that there is, for each realm, and in particular, for the educational realm, some special and exclusive discipline, comprising within its scope all those principles capable of describing and explaining the peculiar order which it exemplifies. (Scheffler, 1973). The variety of disciplines, on this view, thus arises out of the variety of types of phenomena. To each such type corresponds a single discipline, and every discipline corresponds to some single type. The existence of educational phenomena thus guarantees at least in principle, a unique discipline of education, though admittedly, any range of objects manifesting educational phenomena will certainly be manifesting other sorts of phenomena as well and so be analyzable by several disciplines at once (Scheffler, 1973).

From the above viewpoint, one can arrive at that Education is an applied discipline, since it is a product of training and experience leading to educational skills. Education has its own field of concepts, processes, ideas, traditions, methods, curricula and the agents involved which form the proper objects of a discipline. The existence of educational phenomena of its own concepts, theories and practices guarantees education as a unique discipline.

Check Your Progress

Notes: a) Write your answer in the space given below.

b) Compare your answer with those given at the end of the unit.

6. Is education a discipline? Justify.

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2.6 DUAL PERSPECTIVES OF EDUCATION

2.6.1 Conceptual – Logical Perspectives

Education as a concept has been compared to 'reform' and 'Curing' by eminent educationist R.S. Peters in his analysis of education. 'Curing' covers a family of processes, such as surgery, administration of drugs, and so on, whose principle of unity is the contribution to good health. Similarly reforming people covers a family of processes which contribute to making them morally better. On the same lines 'educating' people suggests a family of processes whose principle of unity is the development of desirable qualities in them. This view of analysis leads to an implication that teachers who enter the profession would be striving to initiate others into a form of life, which they regard as desirable, in which 'knowledge' and 'understanding' play an important part.

With this background, R.S. Peters proposed three criteria of education which are as follows:

Criteria of Educational Process

1. Education implies the transmission of what is worthwhile to those who are committed to it.
2. Education must improve knowledge and understanding and some kind of cognitive perspectives which are not inert.
3. Education rules out some procedures of transmission on the ground that they lack willingness and voluntaries on the part of the learner.

We do not call a person 'educated' who has simply mastered a skill. For a man to be educated, he must also have some body of knowledge and some kind of conceptual scheme to raise this above the level of a collection of disjointed facts. This implies some understanding of principles for the organization of facts. One must also have an understanding of the 'reason why' of things. Education implies that a man's outlook is transformed by what he knows. The knowledge must not be inert in the sense that it must involve the kind of commitment that comes from being on the inside of a form of thought and awareness. A man cannot really understand what it is to think scientifically unless he not only knows that evidence must be found for assumptions, but also knows what counts as evidence and cares that it should be found. All forms of thought and awareness have their own internal standards of appraisal. It is important to have a commitment to understand and care for those things. 'Education is of the whole man' is not simply a protest against too much of specialized training. It is the conceptual connection between 'education' and seeing what is being done in a perspective that is not too limited. R.S. Peters, describes education as a process of 'initiation'. Initiation is meant here as initiating the child into a kind of life, a culture that is considered worthwhile. Education involves essentially processes which intentionally transmit what is valuable in an intelligible and voluntary manner and which create in the learner a desire to achieve it. Initiation is always into some body of knowledge and mode of conduct takes time and determination to master.

No man is born with a mind for the development of mind marks a series of individual and racial achievements. A child is born with an awareness not as yet differentiated into beliefs, wants and feelings. All such specific modes of consciousness are internally related to types of objects in a public world. Gradually the child learns to name objects, to locate his experience in a spatio-temporal framework and to see causal and 'means to end' categories; to make sense of events and actions and so on. Further differentiation develops as the child becomes initiated more deeply into distinctive forms of knowledge such as science, history, etc. Each of these differentiated modes

of thought and awareness is characterized both by a content or 'body of knowledge' and by public procedures, by means of which this content has been accumulated, criticized and revised. The process of initiation into such modes of thought and awareness is the process of education.

2.6.2 As Social Perspective

Every society believes in education as a potent instrument of social change, and for this reason, great importance is attached to schools. A significant feature of modern child study is that the object of study is the individual in relation with others. The individual grows in the community with others and has obligations to the community as the community has to the individual.

As said, one purpose of education among its many aims is to create social links between individuals on the basis of shared references. The means used are as varied as the cultures and circumstances, but in every case the central aim of education is the fulfillment of individual as a social being. Education serves as a vehicle for culture and values, creates an environment where socialization can take place. Education faces considerable challenges and helps in restoring some of those similarities essential to life in society. Faced with the breakdown of social ties, education has to take on the difficult task of turning diversity into a constructive contributory factor of mutual understanding between individuals and groups.

In any society, some states of mind, modes of conduct structured by forms of thought and awareness and culture are regarded as intrinsically valuable. Education is a term which we use for a family of procedures by means of which individuals are initiated into such forms of thought and awareness and into activities and modes of conduct informed by them. A great part of education takes place in more explicit contexts in institutions devoted to it, where learning situations are intentionally contrived with broad areas transmitting culture, values and imparting worthwhile knowledge. The social aims of education are to give all pupils an insight into their social inheritance, ideals, conditions, customs and institutions of society.

It is to help the individual by arousing knowledge of, an interest in, and a sympathy toward all branches of society. They give practice in social communication and social service. They develop social efficiency and adapt the individual to his society. The educational sociologists define education as "the pre-eminent process of developing in the individual the power of adaptation and adjustment to his social environment. One of the purposes of education is the formation of the common habits for social integration and social efficiency through social harmony. Education should help the individual to acquire the universally accepted habits and attitudes of his social group. Through education, a child should be enabled to keep himself away from crime and poverty, drugs and disease, selfishness and unemployment, and all such recognized evils. Social aims of education seek to perpetuate all traditional social beliefs and practices by pupil coercion. Educational institutions are used to change society by changing the individual who make up the society.

In ancient times, Spartan education was mostly based on social aims. The Spartan state was pre-eminent. So, education sought group welfare and everything and everybody was subject to this ideal. This was in accord with the general Hellenic archetype of individual excellence for tribal advantage.

An individual comes to a full realization of his own social dimensions through an apprenticeship of active participation in the functioning of social structures, and where necessary, through a personal commitment in the struggle to reform them.

Education serves to achieve these social outcomes through its multipurpose activities.

Check Your Process

Notes: a) Write your answer in the space given below.

b) Compare your answer with those given at the end of the unit.

7. What are the criteria of the educational process?

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8. Differentiate between logical and social perspectives of education.

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2.7 LET US SUM UP

Knowledge is an interaction of man with his environment, which results in conceptual network leading to different conceptual schèmes. Knowledge is a sum of concepts, facts, principles and generalizations, which is unique to every discipline. Discipline is an organized body of knowledge with its own unique mode of enquiry and a history of evolution of ideas. There are basic disciplines, which have characteristic attributes of their own unique knowledge, method of accumulating knowledge, criterion of verification and evolution of ideas. The applied disciplines stem from these basic disciplines, which aim at application of ideas and principles that have resulted in various fields. The interdisciplinary and multidisciplinary areas are those that have integrated various disciplines relevant to the area. Education is considered as an interdisciplinary area as it borrows certain principles, rules and philosophies from the disciplines like philosophy, psychology, sociology, economics and so on to address various issues and problems related to the learner, learning environment, curriculum, instruction, discipline, etc. Education is considered as the family of ideas that is directed towards the 'wholeness of man' with special emphasis on its knowledge and social pursuits.

2.8 UNIT-END ACTIVITIES

1. Make a list of disciplines being taught in the college or the university from where you have received your education. Classify them according to the following broad areas.
   i) Basic discipline
   ii) Applied discipline
   iii) Multidiscipline
2. Examine the curriculum of Education as suggested by the University Grants Commission from the viewpoint of Education as a discipline and give your critical comment.

2.9 POINTS FOR DISCUSSION

1. Can Education stand independently as a discipline without depending upon other disciplines? Discuss.
2. Do we have 'disciplines' or 'subjects' in the school curriculum?

3. What is the meaning of conceptual structure that forms a basis for a discipline?
4. Of the seven forms of knowledge proposed by Paul Hirst, which are the most important to you as an educator?

2.10 SUGGESTED READINGS

Scheffler, I. (1973): *Reason and Teaching*, International Library of the Philosophy of Education, London: Routledge and Kegan Paul Ltd.

Woods, R.G. (1986): *Education and its Disciplines*, London: University of London Press Ltd.

Jeffreys, M.C.V. (1976): *Education: Its Nature and Purpose*, London: George Allen and Unwin Ltd.

Hirst, P. (1974): *Knowledge and Curriculum*, International Library of the Philosophy of Education, London: Routledge and Kegal Paul Ltd.

Peters, R.S. (1977): *Education and Education of Teachers*, International Library of the Philosophy of Education, London: Routledge and Kegan Paul Ltd.

2.11 ANSWERS TO CHECK YOUR PROGRESS

1. A discipline is an organized body of knowledge with a logical structure. It is a network of concepts and generalizations which explain the relationships among a body of facts.
2. The substantive structure of a discipline is the interrelated collection of powerful ideas that guide research in a discipline. The syntactical structure of a discipline is concerned with issues such as the way in which new substantive concepts are formed and the ways in which different kinds of knowledge statements generated by the discipline.
3. Knowledge can be categorized into propositional knowledge, procedural knowledge and direct knowledge.
4. The disciplines which have their own logical structure of knowledge are called Basic Disciplines. For example, Philosophy, Mathematics are basic disciplines. The applied disciplines are those wherein the knowledge of basic disciplines are used. Bio-technology, Meterology, Environmental Science are example of applied disciplines.
5. Multidisciplinary approach occurs when structure or concepts are selected from various disciplines to create a new field of study. Environmental Education, Population Education, Management Education, etc.
6. Education is an applied discipline because it is a product of training and experience leading to educational skills. Education has its own field of concepts, processes, ideas, traditions, methods, curricula and the agents involved which form the proper objects of a discipline.
7. The following are the criteria of educational process:
   i) The transmission of what is worthwhile to those who are committed to it.
   ii) Improvement of knowledge and understanding and some kind of cognitive perspectives.
   iii) Ruling out some procedures of transmission on the ground that they lack willingness and voluntariness on the part of the learner.
8. Logical perspective of education refers to 'reason why' of things. Mastering a skill or gathering knowledge does not make a person education. He must have some understanding of principles the organization of facts. Social perspective of education emphasizes that education is a potent instrument of social change.