TAMIL NADU TEACHERS EDUCATION UNIVERSITY

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Course 5: Understanding Disciplines and Subjects

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COURSE 5: UNDERSTANDING DISCIPLINES AND SUBJECTS

UNIT-I: Disciplines and Subjects

Objectives

1. understands the disciplinary streams and subjects;
2. notice the links between disciplines and school subjects
3. examines the school curriculum stages in terms of the underlying structure of knowledge;
4. understands the distinction between academic discipline and school subject
5. analyzes the Johndewy's ideas on disciplinary knowledge and curriculum

Introduction

Education is in a process of continuous changes. The modern trends favour for emerging of academic disciplines and allied school subjects. The necessity of teachers with proficiency in academic disciplines and professionalism in school subjects are accounted as essential quality of prospective teachers. Teacher education sector seriously focusing on the necessity of emerging academic disciplines. Some sort of new disciplines like 'curriculum development', 'technology of education'; educational sociology and etc are emerged as new disciplines. Hence, it is relevant to have a clear understanding on the academic discipline and its various factors by teachers and prospective teachers.The accumulated data, information, knowledge, and wisdom of the human race are broken into a large number of disciplines. Usually a discipline represents a particular branch of knowledge. Discipline and Subject are two words that relate to fields of knowledge between which a key difference can be seen.

Definition of Discipline

Discipline refers to a branch of academic study and socially acknowledged name (that for example can be found in a library classification system). A discipline is inscribed in, and upheld by, the national and international networks of research, University departments, research Institutes and Scientific Journals that Produces, Certifies, Rewards, and Upholds that which he calls the discipline's capital. And a discipline is characterized by a particular, unique academic and social style. The disciplines themselves are broken into sub disciplines and sub disciplines. This is a convenient way to organize a library, a school program, or a higher education institution.

Meaning of Discipline

The meaning of discipline refers to a branch of academic study. For example, psychology, sociology, anthropology, mathematics and philosophy are all disciplines. These can mostly be seen in higher educational institutions such as universities. This, however, does not denote that disciplines cannot be seen in other educational settings such as schools. For example, mathematics is a school subject that is also a discipline that is found in higher educational institutions.

Definition of Subject

Subject is

- one that is placed under authority or control.
- that of which a quality, attribute, or relation may be affirmed or in which it may inhere

  a department of knowledge or learning

A subject is someone or something that is under the control of another. An example of subject is a person living in India being under the authority of the Primeminister.

Meaning of the Subject

Subject refers to a branch of knowledge studied or taught. Subject means something or someone that is a topic of a discussion, writing, art piece or area of study. Subjects are the parts into which learning can be divided. At school, each lesson usually covers one subject only. Some of the most common subjects at school are English, History, Mathematics, Physical Education, Religion, Music, Art, Dancing, Health, etc. Science Subject refers to a branch of knowledge studied or taught. These subjects are also branches of knowledge but are often adjusted to accommodate the goals of education. When speaking of subjects attention paid to research is rather minimal.

Most academic disciplines have their roots in the mid-to-late-19th century secularization of universities, when the traditional curricula were supplemented with non-classical languages and literatures, social sciences such as Political Science, Economics, Sociology and Public Administration, and Natural Science Disciplines usually consist of theoretical backgrounds, research and experiments, groups of experts in the discipline, etc. For example, a person who is pursuing his studies in a particular discipline not only gains an in-depth understanding of it but

also conducts experiments or research as well. Such a person is considered as specializing in the chosen discipline.

Distinction between School Subjects and Academic Discipline

Basis of Difference	School Subjects	Academic Disciplines
Aims of Education	Development of basic skills and awareness. Development of a social citizen.	Development of specialised Knowledge and Skills. Development of Scholars, Researchers, Academics, Specialists, etc.,
Nature of content	Simple ideas and information's.	Complex theories of Educators.
Curriculum Construction	Considering needs, wants of learners. Includes learner centred teaching methods.	Contents are arranged for the development of different specialised skills at complex and wider levels.
Development of Skills	Gives importance for the development of basic skills, such as reading , writing and arithmetic.	Gives importance for the development of specialised skills, mainly professional and vocational skills.
Area of Operation	Limited to Schools.	For University and other Higher Education.
Developmental Phases	School subjects come first in the development of a person.	Academic disciplines comes later in one's learning journey from school to University

i. Subjects are not, in fact, drawn directly or readily from their parent studies, and parent studies are not all disciplines.

ii. The disciplines are arranged for the expedient advancement of investigations and researches, but the school subjects are organized for the facilitation of learning and teaching in particular contexts.

iii. The formation of school subjects is driven by social and political needs.

iv. The school subject is a 'transformed' version of the academic discipline.

v. The academic discipline, not the school subject, is providing the frame of reference for defining and delineating what classroom teachers need to know about the subject matter they are supposed to teach.

vi. School subjects come first and academic disciplines later in one's learning journey from school to university.

Importance of Knowledge of Discipline and Subject

Disciplines can be characterized as having:

- a defined approach (shared methods and research questions)
- a label that is different from the subject of study/research
- a history as a human practice
- an associated profession
- Disciplines are taught in higher educational institutions such as universities.
- Examples include: Medicine and Dentistry; Linguistics; Physics, Astronomy and Astrophysics

*Subjects***, on the other hand, are characterized by**:

- being concepts independent of how they've been studied
- being studied by multiple disciplines
- having little or no overlap with adjacent subjects (i.e. are defined in contra-distinction)

Examples include: medicine, French language, physics.

- Subjects are taught in educational institutions such as schools.

Wisdom and knowledge are common words in English language. We equate knowledge with books and teachings, and at classrooms, teachers tell us a lot about knowledge. But wisdom is much more than knowledge as it is an abstract attribute that is not found in every man who is knowledgeable. Continue reading, as this article attempts to highlight the differences between knowledge and wisdom.

The humanbeings are not born with all the facts and information that we assimilate into our brain as we grow up. In the school the teachers and students were taught many concepts at and make understand things that expand our knowledge base. The knowledge that hydrogen and

oxygen molecules add up to make water is knowledge. The fact that the water in our oceans and rivers is the same that comes back in the form of rainfall is again knowledge. The water is predominant one in the society, including its properties and features, but we never know it in its entirety unless we drink and know its taste.

Knowledge

All the facts and information about things, people, places and cultures of the world constitute a knowledge base that we build up as we learn a lot first from our parents and later at school from our teachers. We learn how to behave without elders and react in different situations as per communal norms. All this is referred to as the knowledge that we gain in our life.

The three types of knowledge addressed within the disciplines-based curriculum are:

1. Academic knowledge – This is about scholarship and research. The role of disciplines-orientated knowledge is critical to this.

2. Professional knowledge – This allows theory to be explored through practical situations and enquiry-based learning and helps students to understand and apply academic knowledge.

3. Personal knowledge – In which the values, aspirations and emotional (and spiritual) aspects of learning and educating are formed and fostered.

Wisdom

Wisdom is the application of knowledge in real life situations to obtain desired results. Thus, the ability to apply knowledge in easy to tough situations refers to knowledge. Wisdom comes from experience. You may know how to open the lock of a car. This is certainly knowledge though one that is not desirable. However, wisdom says never to apply this knowledge or else you may have to serve in prison. Wisdom comes from wise, and so wise men have wisdom. But wisdom is a trait that does not come with knowledge alone. It comes with a mixture of knowledge and experience.

Definition for Academic Discipline

According to *Zongyi Deng* "an academic discipline is a field or branch of learning affiliated with an academic department within a university, formulated for the advancement of research and scholarship and the professional training of researchers, academics, and specialists.

Academic Discipline

The term academic discipline originates from the Latin words 'discipulus' which means 'pupil' and 'disciplina' which means 'teaching'. Related to it, there is also the word 'disciple' as it is in the 'disciple of Lord Budha'. The lexicon will give a whole range of quite different meaning of the term; from training to submission to an authority or to the control and self-control of behavior. The term discipline as a verb means training someone to follow a rigorous set of instructions and also imposing and enforcing obedience.
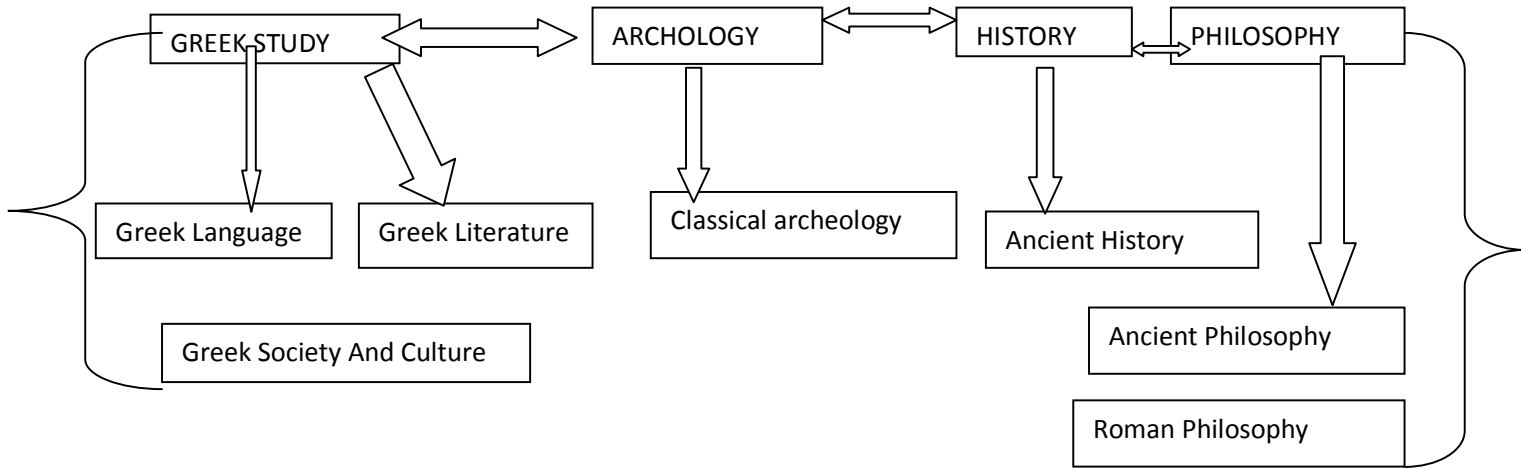
The term academic (scientific) discipline can be defined as the academic studies that focus on a self-imposed limited field of knowledge. It is the subject that one teaches and researches as part of higher education is the academic discipline of that person. It can also be defined as form of specific and rigorous scientific training that will turn out practitioners who have been disciplined by their discipline (subject) for their own good.

The distinction between the academic discipline and the school subject. These two concepts are analysed as they figure in the construction of curriculum by:

(1) examining a range of possibilities regarding the relationship between the academic discipline and its related school subject(s); and

(2) interpreting the meaning of each, using the various possible relationships as the context for meaning.

It is suggested that academic discipline and school subject may be thought of as continuous, discontinuous, or different but related (in three variations). Using historical examples, actual curricular proposals associated with each possibility are described. Finally, an analysis is made of those meaning possibilities for their direct impact on curriculum (in terms of purpose, practice and substance) and for their political impact on various vested interests.

GREEK STUDY ⟷ ARCHOLOGY ⟷ HISTORY ⟷ PHILOSOPHY

Greek Language | Greek Literature | Classical archeology | Ancient History

Greek Society And Culture

Ancient Philosophy

Roman Philosophy

Teacher education sector seriously focusing on the necessity of emerging academic disciplines. Academic disciplines are in the making in the field. Some sort of new disciplines like 'curriculum development', 'technology of education'; educational sociology and etc are emerged as new disciplines. Hence it is relevant to have a clear understanding on the academic discipline and its various factors by teachers and prospective teachers.

Academic Discipline: Special Features

The term academic discipline becomes a technical term for the organization of learning and the systematic production of new knowledge. Disciplines are identified with taught subjects. But every subject taught at school or at university cannot be called a discipline. There are more to a discipline that the facts and concepts of a subject taught in academic setting. There are many criteria and characteristics which indicate whether a subject a distinct discipline (Biglan, 1973). Some of the essential characteristics of an academic discipline are given below:

1. Disciplines have a particular object of research (eg: politics, society, human behavior)
2. Disciplines have a structure of accumulated specialist knowledge referring to their object of research
3. Disciplines have theories and concepts that can organize the accumulated specialist knowledge effectively
4. Disciplines use specific terminologies or specific languages adjusted to their research objects

5. Disciplines have developed specific research methods according to their specific research requirements.

6. Disciplines must have some institutional manifestation in the form of subjects taught at colleges or universities. It means a discipline will have academic departments and professional associations connected to it.

All these criteria may not be fulfilled by all disciplines. But an academic discipline must be perfect and should be able to accumulate more knowledge through the process of research. It must be dynamic.

Some of the Essential Characteristics of an Academic Discipline are Given Below:

- Disciplines have a particular object of research (eg: politics, society, human behavior)
- Disciplines have a structure of accumulated specialist knowledge referring to their object of research.

Academic Discipline: Some Insights

Academic discipline is vast accumulation of knowledge in a specific area. For eg: History is discipline. It can also consider Medieval Indian History a discipline. Physics is a discipline. Astro- physics is a discipline. Robotics is a discipline.

A discipline incorporates experts, people, projects, communities, students, inquiries, researches and etc. that are strongly associated with the given discipline. For Eg: Micro economics or Bio Informatics or Educational Psychology or Human value education.Individuals associated with academic discipline are referred to as experts or specialists.Educational institutions originally use the term discipline to list and record the new and expanding bodies of knowledge and informative procedure by the society or community.

The formation of a new discipline thus requires talented scientists who can take over the burden of intellectual leadership by defining what the new discipline is about and by giving it a clear agenda for research, which can inspire followers. In other words, founding a new discipline needs adventurous pioneers who are willing to leave their original discipline behind and to cover new ground, which always includes a certain risk that they and their new discipline will possibly fail. This means that practically every new discipline starts off necessarily as an interdisciplinary

project that combines elements from some parent discipline(s) with original new elements and insights. Once the discipline is established a new type of researcher is needed. The new discipline needs people who can consolidate it by filling in the gaps left by the pioneers. Without these consolidators and synthesizers a discipline will never develop some stable identity and will eventually go nowhere. So in the consolidation phase disciplines will start restricting too original ideas and will become more and more focused on disciplinary coherence and orthodoxy.

Need and Importance of Studying School Subjects

All thesubjects are more important, the importance of social sciences should not be ignored. In fact, in areas such as social and primary care, the justice system, and business, to name just a few, social science is extremely important, and necessary. It is therefore very important that this educational imbalance be addressed and more support provided to the social sciences.

The argument proposed here is that teachers do need basic knowledge of related academic disciplines, but knowing the content of a school subject lies at the heart of their professional understanding. School subjects, not academic disciplines, constitute the "locus" of classroom teaching; they frame classroom teachers' practice and perspectives on curriculum and instruction . Knowing the content of a school subject involves knowing more than the contentperuse; it entails knowing the theory of content – i.e., knowing how the content is selected, formulated, framed, and transformed in ways that render meaningful and educative experiences for students. This knowing is crucial for disclosing the educational potential inherent in the content.

Teachers need to have three kinds of subject matter knowledge: content knowledge, pedagogical content knowledge, and curricular knowledge. Content knowledge includes knowledge of the substance and structure of the academic discipline. Pedagogical content knowledge involves an understanding of pedagogical representations and instructional strategies, and of students' pre-conceptions with respect to particular curriculum topics at particular grade levels. By means of this knowledge, the teacher transforms his or her disciplinary content into "forms that are pedagogically powerful and yet adaptive to the variations in ability and background presented by students". Curricular knowledge involves an understanding of the

curriculum and the instructional materials available for teaching a subject at various grade levels, which can be an aid to the transformation process..

Curriculum Content

Meaning

The terms *curriculum* or *curricula* are used in educational contexts without qualification, specific examples, or additional explanation, it may be difficult to determine precisely what the terms are referring to mainly because they could be applied to either all or only some of the component parts of a school's academic program or courses.

Curriculum content is defined as what the teacher and the students pay attention to when they are teaching and learning. It is a list of subjects, topics, themes, concepts or works to be covered. It is the subject matter, process, approaches, and feelings used in teaching as the curriculum is being implemented. Curriculum content refers to what is taught in school, it is the subject matter or topics consisting facts, concepts, ideas, knowledge within a particular subject and how they will bring about change in the individual and to the society

Curriculum content is another main lever of education quality. The knowledge, skills and attitudes imparted by learning areas/subjects, cross-cutting approaches and extra-curricular activities is a main source of systematic and comprehensive learning. While learners may learn from many other different sources (especially in an informal way from the Media and Internet), curriculum's advantages in structuring and sequencing learning represents a major asset for sustainable acquisitions that ought to be well exploited and capitalized on.

Curriculum is defined as "the instructional and educative program through which the pupils achieve their goals and aspirations of life". The curriculum consists of components/elements such as the curriculum intent, content, learning activities, learning experiences and lastly evaluation. All these components of the curriculum are interrelated and important for an effective curriculum implementation.

The term curriculum refers to the lessons and academic content taught in a school or in a specific course or program. In dictionaries, curriculum is often defined as the courses offered by a school, but it is rarely used in such a general sense in schools. Depending on how broadly

educators define or employ the term, curriculum typically refers to the knowledge and skills students are expected to learn, which includes the learning standards or learning objectives they are expected to meet; the units and lessons that teachers teach; the assignments and projects given to students; the books, materials, videos, presentations, and readings used in a course; and the tests, assessments, and other methods used to evaluate student learning. An individual teacher's curriculum, for example, would be the specific learning standards, lessons, assignments, and materials used to organize and teach a particular course.

Importance of curriculum content

Curriculum content is relevant when it meets the need of a society such as unemployment; by teaching what is relevant or related to societal issues at hand through practical and theoretical concepts. Furthermore, the curriculum is of social relevance when it gives solutions to the problems of the society such as pollution, deforestation and many more. The curriculum content should therefore meet the needs of society in which it is being implemented. Curriculum content should be localized if it has to meet the need of the immediate society

John dewy's Ideas on' Disciplinary Knowledge and Curriculum

John Dewey viewed subject matter as a distinctive and specialized domain of experience for learners. Subject matter consists of a body of facts, concepts, values, and techniques that are selected, organized, and sequenced in a way that centers upon the predetermined objectives.

His ideas have been influential in education and social reform. He was one of the early developers of pragmatism and functional psychology. The following are some of his ideas about education and society. According to Dewey, it is not enough to extend the voting rights. It is of paramount importance to form public opinion through education as well. The aim is to ensure effective communication among citizens, experts, and politicians. The school itself is a social institution through which social reform can and should take place. Thus, Dewey makes a strong case for the importance of education not only as a place to gain content knowledge, but also as a place to learn how to live. In his eyes, the purpose of education should not revolve around the acquisition of a pre-determined set of skills, but rather the realization of one's full potential and the ability to use those skills for the greater good in society. In addition to helping students realize their full potential, Dewey goes on to acknowledge that education and schooling are

instrumental in creating social change and reform. John DeweyJohn Dewey was one of the first major contemporaries to develop a clear idea of what constructivism consists.. He was concerned with the learner. He wanted to shed light on the learner as an important agent in the learning process. He had precise insights regarding how education should take place within the classroom. According to Dewey there are two major conflicting schools of thought regarding educational pedagogy.

Centered on the curriculum and focuses almost solely on the subject matter to be taught. Dewey argues that the principal weakness in this methodology is the inactivity of the student; within this particular framework, the child is simply the immature being who is to be matured; he is the superficial being who is to be deepened.

Learner-centered. He argues that in order for education to be most effective, content must be presented in a way that allows the student to relate the information to prior experiences, thus deepening the connection with this new knowledge. Although Dewey believed in the second view of education, he was alarmed by the excesses of **"child-centered" education**. He argued that too much reliance on the child could be equally detrimental to the learning process. The potential flaw in this line of thinking is that it minimizes the importance of the content as well as the role of the teacher. For this reason he tried to strike a balance between delivering knowledge while also taking into account the interests and experiences of the student.

For Dewey the child and the curriculum are simply two sides. One cannot do without the other. These ideas made John Dewey one of the most famous advocates of hands-on learning or experiential education. In addition to Dewey's ideas about how the learning process should take place, He also reevaluated the role that the teacher should play within that process. According to Dewey, the teacher should not be the sage on stage anymore. The role of the teacher should be that of facilitator and guide. The teacher becomes a partner in the learning process, guiding students to independently discover meaning within the subject area.

Curriculum

1. **Principle of utility:** covered subjects' language, literature, physical science, health science, math, history, geography etc. subjects should be beneficial for students daily routine life.

2. Principle of natural interest: according to the need, interest, ability of the learners.

3. Principle of activity and expression:

4. Principle of integration with other subjects

5. Principle of flexibility

6. Based on experiences

7. Choice of Subjects in the School Methods of Teaching:

Activity method, Learning by doing, Integration method, Teaching with real experiences Experimental method Discipline, Education as a preparation, Make necessary resource, Education as unfolding, Growth and progress are just approximations, The significance of the native capacities of children, Need of practical and technical knowledge Role of teacher, Practical knowledge, Creates proper environment during teaching learning process, Teach with real experiences, Philosopher, friend and dictator, Used effective methods of teaching, Knowledge about subject, Follow psychological aspects of the learners, According to the mental level of the learners, Have knowledge of national as well as international level Evaluation, Child centered and Democratic education

> • Project method is more valuable for all round development of child, Against corporal punishment, Favour in self-discipline, Related with development of life, Self-learning through experiences, Believes in experimentation and experiences, Innovative learning and Stress on actions.

Need and Importance of Studying School Subjects

☞ To develop basic skills like reading ,writing and arithmetic [3R's]

☞ To enhance students' understanding of themselves, their society, their nation, the human world and the physical environment.

☞ To enable students to develop multiple perspectives on contemporary issues in different contexts (e.g., cultural, social, economic, political, and technological contexts).

☞ To help students become independent thinkers so that they can construct knowledge appropriate to changing personal and social circumstances.

☞ To develop in students a range of skills for life-long learning, including critical thinking skills, creativity, problem-solving skills, communication skills, and information technology skills.

☞ To help students appreciate and respect diversity in cultures and views in a pluralistic society and handle conflicting values.

☞ To help students develop positive values and attitude towards life, so that they can become informed and responsible citizens of society, the country and the world.

☞ They contribute to the pursuit of self-actualization, personal growth, and individual freedom.

Relationship between School Subjects and Academic Discipline

School subjects can have different and variable relationships to academic disciplines, depending on their aims, contents, and developmental phases. School subjects are derived from and organized according to the "structure" of academic disciplines. They constitute a faithful and valid introduction to the academic disciplines. While students are dealing with relatively simple ideas and methods in school subjects, they study the same ideas and methods known by experts in the academic disciplines. So school subjects are the connecting links to academic disciplines. Academic disciplines are of complex nature, and they are the continuation of school subjects.

School subjects are basis for the development of basic information that will turns the learners into specialists in academic disciplines. A school subject results from the transformation of an Academic Discipline. School subjects comes first and academic disciplines later in one's learning journey from school to university. An academic discipline provides the endpoint for the formation of a school subject and the school subject furnishes the avenue for getting to know the academic discipline

Conclusion

We find that, the term 'discipline' has become of trivial and historical importance. All the fields of knowledge are suffering from continuous fragmentation and specialization. Almost all the disciplines have crossed their boundaries and expanded their territories resulting in new fields of knowledge which are applied, professional and interdisciplinary/multidisciplinary in

nature. A disciplines-based curriculum facilitates this with its focus on critical thinking, precision in relation to the key elements of the disciplines and expected student engagement.

Questions for Discussions and Reflections

1. Define "academic discipline and school subjects
2. Explain the difference between academic discipline and school subjects
3. Discuss the relationship between academic discipline and school subjects
4. Analyze the John Dewy's views of curriculum content
5. Explain What are the importance of the School subject?

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UNIT – II: DISCIPLINES AND SUBJECTS IN SOCIO-CULTURAL PERSPECTIVES

Objectives:

After completion of the unit, the learners will be able to,

1. trace out the emergence and development of knowledge, subject and curriculum in social, political and intellectual context.

2. understand the change in social science, natural science and linguistics.

3. comprehend the various concepts of knowledge.

4. redefine the school subjects from socio-cultural perspectives.

I - Emergence and Development of Knowledge, Subject and Curriculum in Social, Political and Intellectual Context

Knowledge

Knowledge, according to Swami Vivekananda is to find out unity in the midst of diversity – to establish unity among things which appear to be different from another.

According to Plato, knowledge is true opinion combined with reason, i.e. for which the claimant to knowledge can give adequate grounds or rational justification.

Methods of Acquiring Knowledge

According to Dr. Radhakrishnan, "knowledge presupposes unity or oneness of thought and being, a unity that transcends the differentiation of subject or object. Such knowledge is revealed in man's very existence. It is unveiled rather than acquired. Knowledge is concealed in ignorance and when the latter is removed, the former manifests itself".

1. Knowledge through Sense of Experience
2. Knowledge through Intuition
3. Knowledge through Reasoning and Rationalization
4. Knowledge through Empirical Approach
5. Knowledge through Inspirational Approach
6. Knowledge through Authoritarian
7. Knowledge through Social Awareness
8. Knowledge through Action
9. Knowledge through Training.

Emerging Problems relating to Knowledge

1. **Explosion of Knowledge**

   Knowledge, sometimes we call information or subject content is acquired as a result of man's interaction with the universe. Naturally, it gets accumulated and multiplied, widening the boundaries of every discipline or form. This possess a problem to curriculum and textbook planners and developers as it requires the inclusion of the latest information and making the curriculum and textbooks up-to-date.

2. **Plurality of knowledge**

   With the added knowledge acquired, the original fields or disciplines or subjects of the curriculum are branching themselves into new fields. Since each expert focuses upon a significant aspect of knowledge, one feels tempted to include more or more subjects in the curriculum and textbooks. This leads to the selection of subjects

3. **Integration of knowledge**

   The present day tendency is integration of knowledge or unity of knowledge as against separation. This needs an integrated approach to subjects.

4. **Interdisciplinary Approach**

   The interdisciplinary approach to knowledge cuts across several disciplines to explain any aspect of human environment

5. **Several specializations**

With the multiplication of the accumulated knowledge, the issue of specialized knowledge and general knowledge crops up.

Change and the Curriculum

Educators, in general, and teachers and curriculum workers have a choice that has been offered to them throughout the ages. They may uncritically accept the tendencies of the times in which they find themselves, and develop school programs that mirror current social and political forces; or they may appraise the times and develop school programs that respond to the dynamics of change. The curriculum can either reflect society or reflect upon and indirectly help shape society. Teachers may either serve as cogs in a bureaucratic school machine, keeping subject

matter safe and sterile, or they may help students think and act-by offering specialized, knowledge, raising controversial issues, and incorporating problem solving activities.

The first approach views the school and educator as mirrors of society; the second approach views schools and school people as instruments of change. The former approach is based on the traditional conception of education. Sadly, the first approach tends to coincide with the reality of schools; the second approach borders on the ideal.

Society as a Source of Change

Contemporary society is changing so swiftly that we have difficulty coping with it and adjusting ourselves to the present and preparing for the future. We are forced to look to the schools for help in understanding and living with social change, but schools are conservative institutions that usually lag behind change.

Rate and Direction of Change

There are two basic ways to conceive change – rate and direction. The rate of change has implications that are quite apart from, and sometimes more important than, the direction of change.

Educators, especially curriculum specialists, need to reduce educational lag. The fact of rapid change and the need to plan schools today for tomorrow bring to mind series questions: What policies govern our society? At a global level, what should be our educational aims? How do we identify the "good" life and what role do the schools play? How do schools reduce the gap between the "haves" and "have notes"? How do the schools prepare students for the world of tomorrow, when teachers who are trusted to do the job mainly rely on a knowledge base that is quickly becoming, if it is not already, dated?

Schools as a Source of Change

If we take a broad, long view of schools – that is, a macro view- we can observe noticeable changes in schools over time. Historically, according to Philip Jackson, "one has only to think of the wooden benches and planked floors of the early American classroom as compared with the plastic chairs and life flooring in today's suburban schools to note change." We can strengthen the contrast by looking back to the one-room schoolhouse: Students of many ages

were crowded in one room; the teacher stood behind the pupil preaching the daily lessons; no blackboards or chalk were used; the desks and chairs were bolted down; the sun was the major source of light; and firewood was the main source of heat. Schools, today, are dramatically different.

If we look at the school during our lifetime-that is, a micro view-say, when we were attending elementary school, we note that the changes have been minimal. Unruh and Alexander have summarized the milieu of change since the 1950s: "Surface changes, small and isolated innovations and lack of comprehensive approaches to changes" have prevailed in the schools. The underlying assumption, or the reason for the lack of change, has been that "the school as an institution was headed in the right direction except that it needed to exert more effort toward its previous goals and make content and instruction more palatable to students. It was taken for granted that there was nothing wrong in the schools and it was the student" and not the schools "that needed to be changed."

Although the research in education may be impressive in quantity, very few noticeable changes have resulted in schooling since our days as results. We are basically using the same instructional methods in the classroom that we were using fifty years ago, according to one observer. On the other hand, the changes and improvements in science, technology and medicine within the last five years have been impressive, and they have affected almost all of our lives in some way.

We might expect educational aims and subject matter to change as society imposes new social and political demands on the schools, and as new knowledge is created. And they do! However, we should not expect the structure and organization of schools to change dramatically. This is why a teacher, after ten or twenty years of retirement, could, if he or she wanted, go back into the classroom and still be effective.

We must understand that schools are highly bureaucratic and conservative (or traditional) institutions that operate with standardized norms of behavior, written rules and regulations, and well-defined tasks dispersed among administrators, teachers and students. As parents and/or teachers who were once students, we can return to school and readily cope and functions almost

immediately because the behaviors and tasks, the rituals, rules, and regulations, have not changed much since we were children.

As teachers, curriculum specialists, administrators, and students interact on a daily basis in the operation of a school, a social order develops: A set of routines and rules surfaces and group norms and organizational values become pervasive and shape individual personalities and behavior. Hoy and Miskel describe this process: "The school is a system of social interaction; it is an organized whole comprised of interacting personalities bound together in an organic relationship. "The school is "characterized by an interdependence of parts, a clearly defined population differentiation from its environment, a complex network or social relationships, and its own unique culture." The outcome is a host of institutional norms and patterns of behaviors that govern the interaction between teachers and students and between curriculum specialists and other support staff. Observers use terms like intrinsic character, institutional realities, or cultural patterns to describe these social characteristics and interactions." When taken together they tend to result in a persuasive method of socializing and controlling the people who attend and/or work in schools, and they tend to inhibit change.

Knowledge as a Source of Change

The accumulated body of organized knowledge about people and the world may be viewed as an extension and interaction process with contemporary society. As society changes, so does our knowledge. The schools should be considered as a major data source for knowledge especially for children and youth, in terms of: i) screening knowledge against aims of the society that sets for education, ii) identifying important kinds of knowledge, and iii) determining what can and should be taught.

Explosion of Knowledge

Every 15 years or so, our significant knowledge doubles, and this trend makes it important to continuously reappraise and revise existing curricula. According to Bentley Glass "that the amount of scientific knowledge available at the end of one's life will be almost one hundred times what it was, when he was born". Similarly, Warren Ziegler maintains that: i) more mathematics has been created since 1900 than during the entire period of history, ii) half of what a graduate engineer studies today will be absolute in 10 years, and iii) half of what a person

learns is no longer valid by the time he/she reaches middle age. In assessing the rush of knowledge, Alvin Toffler asserts that knowledge explosion, as it shapes the future, curriculum specialists have two major problems that require continuous attention: i) what knowledge to select and ii) how to organize it.

What Knowledge is of most Worth?

In this question, which was raised by Spencer, has social implications, it is certainly more relevant today, because of the complexity of and changes in society, than it was during Spencer's time. In recent years, the question has, in fact been repeated by many different curricularists. Actually, the question dates back to ancient Greece, when Plato and Aristotle questioned the value of knowledge in relation to society and governmental affairs, and to ancient Rome, when Quintilian set forth the original seven liberal arts – grammar, rhetoric, logic, arithmetic, geometry, astronomy and music as the ideal curriculum for educated citizens of public life.

Knowledge Areas and Skills

As our knowledge is changing so rapidly, we must continuously ask ourselves what is the most worthwhile knowledge, and we must continuously reappraise what we mean by worthwhile. Weinstein and Fantini attempt to integrate a cognitive and humanistic view towards knowledge and learning. Referring to knowledge as "content vehicles", they contend that content shared "include not only conventional subject areas, but also foundation disciplines such as, psychology, sociology, anthropology, philosophy and so on.

Joseph Tykociner suggests twelve basic areas of knowledge for dealing with change: i) arts ii) symbolic of information iii) hylenergetics (science dealing with matter and energy) iv) biological science v) social science vi) sociology vii) exeligmology (science dealing with the past) viii) pronoelics (science related to sustaining humanities) ix) regulative area (harmonizing human relations) x) disseminative area (transmission of knowledge) xi) zetelics (how knowledge can be systemized and increased) xi) integrative areas.

Knowledge is energized as a continuous process that shapes society and links the past, present and future. Hence,

1. Knowledge should comprise the basic tools

2. Knowledge should facilitate learning

3. Knowledge should be applicable to the real world

4. Knowledge should improve learner's self-concepts, awareness skills and sense of personal integrity

5. Knowledge should permit the individual to retrieve old information

6. Knowledge should prepare the individual for the world of technology

7. Knowledge acquisition should be a lifelong process

8. Knowledge should be taught in context with values.
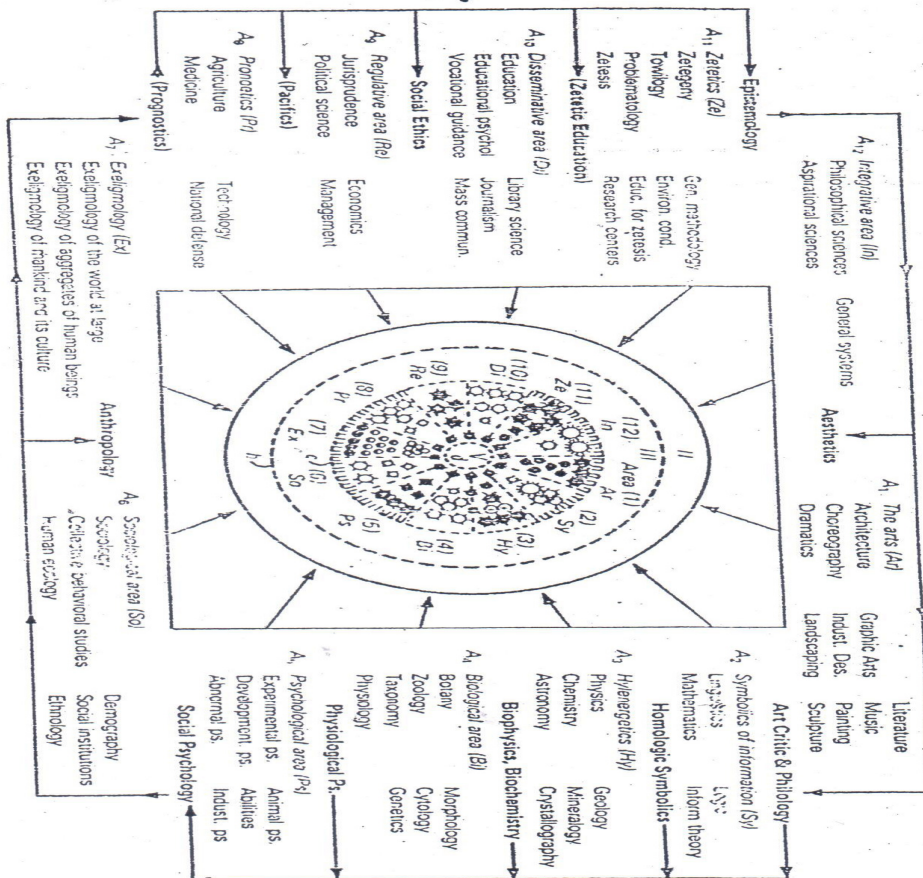
Basic Areas of Knowledge

Source : From Joseph.T. Tykociner, Outlines of Zetetics Philadelphia,1966.

II - Changes in Social Science, Natural Science and Linguistics

a) Social Science

Introduction

In recent years STEM (science, technology, engineering, and mathematics) sciences have received the majority of investment and support from government, universities, etc., while these subjects are no doubt important, the importance of social sciences should not be ignored. In fact, in areas such as social and primary care, the justice system, and business, to name just a few, social science is extremely important and necessary. It is therefore very important that this educational imbalance to be addressed and more support provided to the social sciences.

Meaning and Concept of Social Science

While for many people the words "social sciences" may bring to mind the images of social workers or teachers, this is a gross misunderstanding of the range of roles available within this discipline, as well as the impact that it has on the wider world. In general, social sciences focus on the study of society and the relationship among individuals within society. Social science covers a wide spectrum of subjects, including economics, political science, sociology, history, archaeology, anthropology, and law. In comparison to STEM sciences, social science is able to provide insight into how science and innovation work – in effect it is the science of science. In particular, social scientists are equipped with the analytical and communication skills that are important throughout many industries and organizations.

What do social scientists do?

Social scientists are involved with solving many of the world's biggest issues, such as violent crime, alternative energy, and cyber security. They have had profound effects on every part of society.

The choice between STEM and the social sciences is really a false one; society needs people trained in both. In order to formulate effective solutions for society and to understand the implications of those solutions, a mix of both STEM and social sciences will be required. Social science is already increasingly engaged in collaborative cross-disciplinary work in diverse fields such as engineering, medicine, computing, biology, and mathematics. It is clear that no subject area can stand alone, walled off from the outside, and that social science can play an important role in all fields.

Subfield of Social Science

It is more useful to understand the social sciences in terms of the focus of the knowledge it stimulates. The social sciences are an inherent outcome of the emergence of western modernity

and its associated ways of seeing the dynamics human relationships and interactions - a process of transition from a pre-modern traditional social order to a secular rational one. The range of contributors to the development of the social sciences characterized the terminology and nature of this transition in different ways community to society (Tonnies), traditional to rational legal authority (Weber), feudalism to capitalism (Marx).

This history set the stage for the emergence of the range of issues, and hence to some extent the range of issues studied by the social sciences.

- **History:** focusing on a narrative of the dynamics of collective entities - institutions, communities' nation states, the international order
- **Politics:** focusing on the way that power and influence is articulated, particularly within the governing institution of nation states.
- **Sociology:** focusing on how our humanity is shaped and constrained by social context within which we live our lives
- **Anthropology:** initially differentiated from sociology in its focus on pre-modern communities, but now more characterized by its research traditions of immersive fieldwork and symbolic meanings more broadly.
- **Social geography:** focusing on the spatial organization of human communities'
- **Political economy:** focusing on how human societies and the international order are shaped by its processes of material production and distribution.
- Business studies
- Communication studies
- Criminology
- Demography
- Development studies
- Economics
- Education
- Geography
- History
- Industrial relations
- Law

- Linguistics

- Media studies

- Methodology

- Philosophy

- Political science

- Psychology

- Public administration

- Sociology

- Legal Management

- Paralegal studies

- International studies

- Library Science

- Information Science

b) Natural Science

Meaning and Definition of Natural Science

Science is a set of tools and systematic methods for studying the natural world through observation and experimentation. Or more simply, science is a way of exploring and understanding the physical world.

We humans love to find patterns, and we've been looking for patterns in the world as long as we've existed. Our brains, however, are not very reliable when it comes to identifying and explaining those patterns. In fact, we can be pretty terrible at it. We get sick, and we assume it was the last thing we ate, even though it almost never is. We see a cold winter and call climate change a hoax. So, many of our instincts are objectively wrong.

Science is a way of avoiding that by using a systematic method called the **scientific method**: identify the problem, gather data, create a hypothesis, test the hypothesis, does the new data agree with the hypothesis?
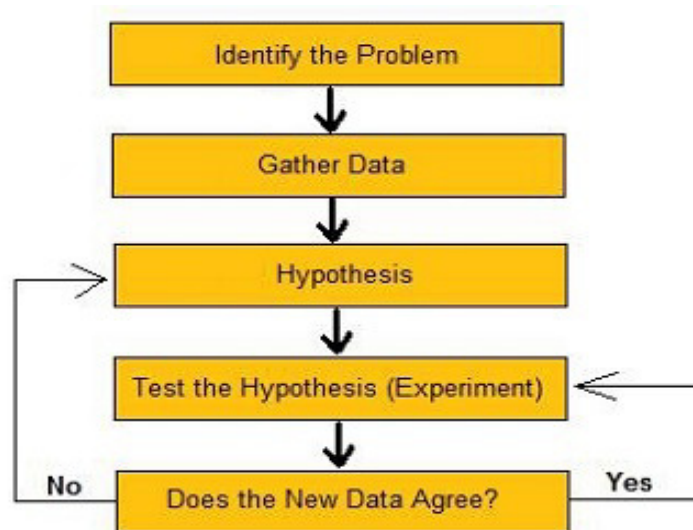
Branches of Science

The **branches of science** (also referred to as "sciences", "scientific fields", or "scientific disciplines") are commonly divided into three major groups:

- **Natural Science:** the study of natural phenomena (including fundamental forces and biological life).
- **Formal Science:** the study of mathematics and logic, as opposed to factual methodology).
- **Social Science**: the study of human behaviour and science.

Natural, social, and formal science makes up the fundamental science, which form the basis of interdisciplinary and applied sciences such as engineering and medicine. Specialized scientific disciplines that exist in multiple categories may include parts of other scientific disciplines but often possess their own terminologies and expertise.

Natural science is a branch of science that seeks to elucidate the rules that govern the natural world by applying an empirical and scientific method to the study of the universe. The term natural sciences is used to distinguish it from the social science, which apply the scientific method to study human behaviour and social patterns; the humanities, which use a critical or analytical method to the study of the human conditions and the formal science.

Physical science

Physical science is an encompassing term for the branches of natural science and science that study non-living systems, in contrast to the life sciences. However, the term "physical" creates an unintended, somewhat arbitrary distinction, since many branches of physical science also study biological phenomena. There is a difference between physical science and physics.

Physics

Physics is one of the oldest academic disciplines, perhaps the oldest through its inclusion of astronomy. Over the last two millennia, physics was a part of natural philosophy along with chemistry certain branches of mathematics and biology, but during the Scientific Revolution in the 16th century, the natural sciences, emerged as unique research programs in their own right. Certain research areas are interdisciplinary, such as biophysics and quantum chemistry, which means that the boundaries of physics are not rigidly defined. In the nineteenth and twentieth centuries physics emerged as a major unifying feature of the philosophy of science as physics provides fundamental explanations for every observed natural phenomenon. New ideas in physics often explain the fundamental mechanisms of other sciences, while opening to new research areas in mathematics and philosophy.

Chemistry

Chemistry is the science of matter and the changes it undergoes. The science of matter is also addressed by physics, but while physics takes a more general and fundamental approach, chemistry is more specialized, being concerned by the composition, behavior (or reaction), structure, and properties of matter, as well as the changes it undergoes during chemical reactions. It is a physical science which studies various substances, atoms, molecules and matter (especially carbon based); biochemistry, the study of substances found in biological organisms, physical chemistry, the study of chemical processes using physical concepts such as thermodynamics and quantum mechanics, and analytical chemistry, the analysis of material samples to gain an understanding of their chemical composition and structure.

Earth Science

Earth science (also known as geosciences, the geosciences or the Earth sciences) is an all-embracing term for the sciences related to the planet earth. It is arguably a special case in planetary science, the Earth being the only known life-bearing planet. There are, both reductionist and holistic approaches to Earth sciences. The formal discipline of Earth sciences may include the study of the atmosphere, hydrosphere, oceans and biosphere, as well as the solid earth.

Ecology

Ecology is the scientific study of the relationships that living organism have with each other and with their abiotic environment. Topics of interest to ecologists include the composition, distribution, amount (biomass), number, and changing states of organisms within and among ecosystem.

Oceanography

Oceanography, or marine science, is the branch of Earth science that studies the ocean. It covers a wide range of topics, including marine organism and ecosystem dynamics; ocean currents, waves, and geophysical fluid dynamics; plate tectonic and the geology of the sea floor; and fluxes of various chemical substances and physical properties within the ocean and across its boundaries. These diverse topics reflect multiple disciplines that oceanographers blend to further knowledge of the World Ocean and understanding of processes within it: biology, chemistry, geology, meteorology, and physics as well as geography.

Geology

Geology is the science comprising the study of solid earth the rocks of which it is composed, and the processes by which they change. Geology can also refer generally to the study of the solid features of any celestial body (such as the geology of moon or geology of mars).

Geology gives insight into the history of Earth, as it provides the primary evidence for plate tectonic, the evolutionary history of life, and past climates. In modern times, geology is commercially important for minerals and hydrocarbon exploration and exploitation and for

evaluating water resources. It is publicly important for the prediction and understanding of natural hazards, the remediation of environmental problems, and for providing insights into past climate change. Geology plays a role in geotechnical engineering and is a major academic discipline.

Meteorology

Meteorology is the interdisciplinary scientific study of the atmosphere. Studies in the field stretch back millennia, though significant progress in meteorology did not occur until the 17th century. The 19th century saw breakthroughs occur after observing networks developed across several countries. After the development of the computer in the latter half of the 20th century, breakthroughs in weather casting were achieved.

Space Science or Astronomy

Space science or Astronomy is the study of everything in outer space. This has sometimes been called astronomy, but recently astronomy has come to be regarded as a division of broader space science, which has grown to include other related fields, such as studying issues related to space travel and space exploration (including space medicine), space archeology and science performed in outer space.

Life Science

Life science comprises the branches of science that involve the scientific study of living organisms, like plants, animals, and human beings. However, the study of behavior of organisms, such as practiced in ethology and psychology, is only included in as much as it involves a clearly biological aspect. While biology remains the centrepiece of life science, technological advances in molecular biology and biotechnology have led to a burgeoning of specializations and new, often interdisciplinary, fields.

Biology

Biology is the branch of natural science concerned with the study of life and living organisms, including their structure, function, growth, origin, evolution, distribution, and taxonomy. Biology is a vast subject containing many subdivisions, topics, and disciplines.

Zoology

Zoology is the branch of biology that relates to the animal kingdom, including the structure, embryology, evolution, classification, habits, and distribution of all animals, both living and extinct.

Human Biology

Human biology is an interdisciplinary academic field of biology, biological anthropology, nutrition and medicine which focuses on humans; it is closely related to primate biology, and a number of other fields.

Botany

Botany, plant science, or plant biology is a branch of biology that involves the scientific study of plant life. Botany covers a wide range of scientific disciplines including structure, growth, reproduction, metabolism, development, diseases, chemical properties, and evolutionary relationships among taxonomic groups. Botany began with early human efforts to identify edible, medicinal and poisonous plants, making it one of the oldest sciences. Today botanists study over 550,000 species of living organisms.

c) Linguistics

Definition, Meaning and Concept of Linguistics

Linguistics is the scientific study of language as a universal human phenomenon. Linguists investigate the structure of language, its relationship to other systems of communication, the acquisition of first and second languages, language in its social context, the causes and effects of language change, and universal properties of language.

Process of Linguistic

Theoretical linguistics concerns itself with the question of what it means to know a language, to learn a language, and to use a language. Answers to these questions not only provide us with a better understanding of the structure of human languages, but also with an understanding of the properties that define the human language ability. Since language is central

to most human activity, questions and answers arising from theoretical developments in linguistics often have significant impact far beyond the limits of the discipline of Linguistics.

Subfields of Linguistic

The following subfields of linguistics play an important role in the curriculum of the Linguistics discipline,

Phonetics

The branch of linguistics which studies the characteristics of human speech sounds and provides methods for their description, classification, and transcription. Students will become familiar with the International Phonetic Alphabet, which represents the sounds of any human language. For example, the word "baked" would be transcribed as [bejkt].

Phonology

The branch of linguistics which studies the sound systems and sound patterns of languages. Students will become familiar with the rules that govern how we pronounce words. For example, the 'l' sound in the word "lie" is different than in the word "play" and different again in the word "fall".

Morphology

The branch of linguistics which studies the structure of words. Students will become familiar with the processes of word formation. For example, they will learn why we can produce words like "whiten" and "soften", but not "bluen" or "slowen".

Syntax

The branch of linguistics which studies the structure of sentences. Students will become familiar with the principles governing the way words are combined into sentences. For example, they will learn why sentences like "What did you eat eggs with?" sound fine, but sentences like "What did you eat eggs and?" sound bad.

Semantics

The branch of linguistics devoted to the study of meaning in language. Students will become familiar with the ways in which language is used to convey information. For example, they will learn why the word "himself" in the sentence "The boy's uncle admired himself" can refer only to the uncle and not to the boy.

Historical Linguistics

The branch of linguistics which investigates language change. Students will become familiar with the ways in which a language can change over time. For example, they will learn how the earlier Germanic word "musi" became Modern English "mice."

Language Acquisition

The branch of linguistics which studies how children and adults learn languages. Students will become familiar with the characteristics of first and second language acquisition. For example, they will learn why children produce sentences like "I go to outside."

Linguistics as Interdisciplinary

Linguistics is by nature an interdisciplinary field. By interdisciplinary we mean that it is a field that crosses the boundaries of many academic fields. The discipline has its roots in philosophy and philology, and it interfaces comfortably with anthropology, archaeology, modern languages, psychology, and sociology, to name a few areas. Language is a defining characteristic of human beings. As adults, we have a mental representation of the grammar for the language that we speak. Linguistics is concerned with the characteristics of this mental representation, and with how it is acquired. As a result, linguistic theories of learning and theories of mind interact with those developed in psychology and philosophy. A human language, though, is much more than a mental representation. We use language to communicate in a social context. Therefore, linguistics interacts with the disciplines of sociology and anthropology, which inform us about ways of studying society and culture.

Aside from language structure, other perspectives on language are represented in specialized or interdisciplinary branches as follows,

- Historical Linguistics
- Sociolinguistics
- Psycholinguistics
- Ethnolinguistics (Anthropological Linguistics)
- Dialectology
- Computational Linguistics
- Psycholinguistics and neurolinguistics

As language is such a central feature of being a human, Linguistics has intellectual connections and overlaps with many other disciplines in the humanities, the social sciences, and the natural sciences. Some of the closest connections are with Philosophy, Literature, Language Pedagogy, Psychology, Sociology, Physics (acoustics), Biology (anatomy, neuroscience), Computer Science, Computer Engineering, Health Sciences (Aphasia, Speech Therapy).

Conclusion

The main purpose of the study of Linguistics in an academic environment is the advancement of knowledge. However, because of the centrality of language in human interaction and behavior, the knowledge gained through the study of linguistics has many practical consequences and uses. Graduates of undergraduate and graduate programs in Linguistics apply their training in many diverse areas, including language pedagogy, speech pathology, speech synthesis, natural language interfaces, search engines, machine translation, forensics, naming, and of course all forms of writing, editing, and publishing.

III – Concept of Knowledge

Classification of Knowledge

Philosophers and thinkers have classified knowledge differently as 'disciplines', 'forms of knowledge', 'realms of knowledge' and so on.

Disciplines as school subjects

For the sake of convenience, knowledge is usually divided in to several school subjects. However, sometimes school subjects do not truly represent the structure of their parent disciplines.

Forms of knowledge

Prof. P.H. Hirst, in "Knowledge and curriculum" (1974) lists seven 'Forms of knowledge' relevant to curriculum selection

1. Aesthetics
2. Human Sciences including History
3. Moral understanding
4. Philosophy
5. Physical Sciences
6. Religious Forms of Knowledge

R.S. Peter and others in "The Logic of Education' suggests the following forms of human knowledge.

1. Formal Logic and Mathematics
2. The Physical Sciences
3. History, Psychology and sociology
4. Morality and Ethics : Moral Judgments and Awareness
5. Aesthetic Experience
6. Religion
7. Philosophy

Curriculum and textbook planners must give due representation to all forms of knowledge or disciplines.

Realms of Meaning

Prof. Philip Phoenix divides knowledge into six realms of meaning, which correspond to the discipline as under.

The Realms of Meaning and the Disciplines

1. Symbolic - Language, Logic, Mathematics, Symbols in Art.
2. Empirics - Physical and Social Sciences.
3. Aesthetics - Art, Literature, Music.
4. Synoptic - Literature, Philosophy, History, Psychology and Theology.
5. Ethics and Morality - Parts of Philosophy and Theology.
6. Synoptic - History, Philosophy and Religion.

Firm Knowledge

Research carried out by the National Research and Development Centre on Adult Literacy and Numeracy (NRDC) in the UK found that, "some teachers of literacy and numeracy lacked knowledge of the subjects, they were teaching". The research suggests that some specialized courses in informal institutions should include the following areas,

1. Subject knowledge
2. Theoretical knowledge
3. Practical pedagogy
4. Teaching competency

A series of students in the UK highlighted the importance of integrating knowledge of the subject and learning and teaching skills into training and professional development. They noted that the teacher educators need both a firm grasp of their subject and firm knowledge of how to teach it, "the numeracy study concluded that the teacher educators are not only need a firm grasp of the subjects they teach and of but also of the best way to teach them, and they do also need to be an top of their subject specific pedagogic knowledge, similarly teaching reading… requires an understanding of both pedagogy and subject.

Firm Knowledge and Its Domains

There are three domains of firm knowledge as follows,

- **Pedagogical Knowledge:** i) Focused on student's outcome.

            ii) Focused and embedded in teacher practice.

iii) Informed by best available research in effective teaching and learning.

- **Discipline Knowledge:** i) Collaborative, involving, reflection and feedback.

  ii) Evidence based and data driven to guide improvement and measure impact.

- **Pedagogical Content Knowledge:** i) Ongoing supported and fully integrated into the culture and operations of the system – schools, networks, regions and the centres.

  ii) An individual and collective responsibility at all levels of the system.

1. **Pedagogical Knowledge**

   a. Understanding of how to create classroom environments that support learning including the use of ICT.

   b. Knowledge of effective classroom management strategies.

   c. Understanding of and beliefs about learners, how they learn and how learning can be supported by teaching.

   d. Knowledge of activities that develop metacognitive activities and how they can be ignored into the curriculum.

2. **Discipline Knowledge**

   a. In-depth knowledge of subject area – the facts, concepts, ideas and products within a discipline and the relationships between them.

   b. Understanding the explanatory framework that affect the organization of content and the question that guide further inquiry.

   c. Ability to use and integrate the language specific to the discipline into the classroom activities.

3. **Pedagogical Content Knowledge**

   a. Knowledge of how students learn a particular subject matter.

   b. Skills to organize and present subject matter, including models, examples etc.

   c. Knowledge of different approaches to and purpose of assessment.

   d. Knowledge of available, high quality curriculum materials.

Objective Knowledge

➤ Knowledge is a mental grasp of a reality, reached either by perceptual observations or by a process of reason based on perceptual observation.

➤ Objective knowledge is that it cannot be understood or refuted, regardless of situation. A good example would be 1+1=2, this is objective knowledge, because any other meaning attributed to the statement would make it incorrect.

➤ Objective knowledge is more universal than regular knowledge, that's why it has to be critical, because universal knowledge is impossible in one's life time, it is only in a series of steps and approaches.

➤ Objective knowledge is considered that one which all can agree regardless of view point. Subject knowledge generally refers to views attached by the observer's position or attitude.

➤ Simply, objective knowledge is knowledge obtained for which there is independent in corroborating evidence and witness. Most scientific knowledge is thought to be objective.

Impersonal-Diverse

What does the future hold for educators and facilities professionals when it comes to planning, finding, and operating school facilities? No one can absolutely know beforehand.

As futurist Gary Marx (2006) pointed, "identifying, monitoring, and considering the implications of trends in one of the most basic processes for creating the future". Aldridge and Goldman (2007), authors of a book on issues and trends in education, reinforce the need to carefully study trends when they point out that, "People living in the 21st century will be experience more rapid changes than in any other period of human history". And, Gene Glass (2008), writing on the possible fate of public education in America, reminds us that the events of today often reshape the future is dramatic ways not now imagined. He states, for examples," the invention in technologies shapes the culture in ways that are often unpredictable at the birth of the invention. Television killed dance bands; the internet is killing book stores". We can't control the future, but we can help to shape it.

Trends:

1. The numbers of youth increase dramatically
2. The student population becomes more and more diverse
3. The country experiences an ever growing number of older citizens
4. An increasing number of special needs children receive a majority of their instruction and services in regular classroom settings.
5. More and more early childhood students come to school
6. The likelihood of smaller schools diminishes
7. Reductions in Teacher-pupil ratio
8. Grade span configurations continue to evolve
9. Time in school remains relatively unchanged
10. School attendance lines continue to blur and disappear
11. Technology becomes the future: the future becomes technology
12. Larger amounts of instructional time continue to be allocated to core subjects
13. Schools grow greener and greener
14. Who teaches becomes a critical question.
15. By necessity learning evolves to an asynchronous and ubiquitous process

Dialogic Teaching and learning

Dialogic teaching harnesses the power of talk to stimulate and extend pupils' thinking and advance their learning and understanding.

In the last decade researchers have expressed interest in understanding dialogue as it is used to transact educational purposes in classrooms. Dialogic teaching has been the subject of increasing discussion in the last few years and a number of writers have suggested it holds the greatest cognitive potential for pupils, whilst at the same time demanding the most of teachers. Dialogic approaches to classroom practice are contrasted with monologue approaches which dominate classroom practice in many parts of the world.

Russian psychologist Lev Vygotsky emphasized that all learning is located in social, cultural and historical context. He was interested in the relationship between children and others: their families, peers and teachers.

Vygotsky's work has stimulated a research paradigm within educational research which relies heavily on naturalistic observation and reflection in order to understand what is going on. By highlighting the social construction of the childhood the child's active contribution to his or her learning, Vygotsky has helped educators to see the centrality of language in children's development; this, in turn has stimulated research in to the impact of language in learning. As a result of Vygotsky's influence, there is an increasing body of research that supports the view that talk is the key to learning. This interest in children's language has stimulated educational research into children's talk in collaborative interaction with others. Such work has laid to ground for a closer consideration of dialogic talk. For Alexander, dialogic teaching reflects a view that knowledge and understanding come from testing evidence, analyzing ideas and exploring values, rather than unquestioningly accepting somebody else's certainties.

Charis Watkins identified what he calls a co-construction model where learning is conceptualized as creating knowledge as poor of during things with others' He identified key aspects of his model as follows:

-Students operate together to improve knowledge

-Students help each other to learn through dialogue

-Learning goals emerge and develop during enquiry

-Students create products for each other and for others

Dialogic teaching and Learning stems from the following principles:

1. Knowledge is not fixed
2. The dialogue between these different perspectives leads to new understandings and new knowledge
3. Teachers and students can become move fully engaged in learning in an environment where these differences are respected and rigorously explored.
4. Such exploration, where meanings are constructed from the inside by learners in dialogue, rather than imposed from the outside leads to powerful learning
5. Learning through dialog leads not only to content knowledge but improved thinking skills.

Subjective Knowledge

The subjective view of knowledge and understanding might be contrasted with the objective, realist view. In this view there are such things as matter, physical objects, space and time, other people, etc. Things happen, and causally interact, largely independent of observers. Occasionally we experience something subjectively, but later determine that it did not really, objectively happen. For example, we felt room get hot, but the thermometer registered no change. In this view there is a reality independent of our experience. This would be easy to deny if there were only one agent in the world. In that case it clear that agent is merely inventing things to explain its experience. The objective view gains much of its force because it can be shared by different people. In science, this is almost the definition of the subjective/objective distinction: that which is private to one person is subjective whereas that which can be observed by many, and replicated by others, is objective.

The appeal of the subjective is that it grounded. Subjective experience can be viewed as data in need of explanation. There is a sense in which only the subjective is clear and unambiguous "Whatever it means, I definitely felt warm in that room. "No one can argue with our subjective experience, only with its explanation and relationship to other experiences that we have or might have. The closer the subjective is inspected, the firmer and less interpreted it appears, the more is becomes like data, whereas the objective often becomes vaguer and more complex. Consider the old saw about the person who saw red whenever everybody else saw green, and vice versa, but didn't realize it because he used the words "red" and "green" the wrong way around as well. This nonsense points out that different people's subjective experiences are not comparable. The experience that I call seeing red and the experience you call seeing red are related only in a very complicated way including, for example, efforts of lighting, reflectance, viewpoint, and colored glasses. We have learned to use the same word to capture an important aspect of our separate experience, but ultimately the objective must bow to the subjective.
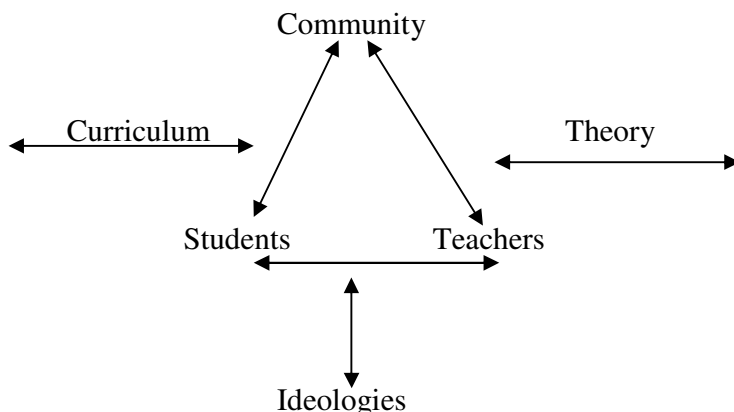
Fluid and Porous Frame

Figure: The Socio-cultural Context of Curriculum from a Critical LLC Perspective

The above figure shows the relationship between curriculum and its broad sociopolitical context, which in our view, must be accounted for and understood by critical multicultural educators. From our shared perspectives of an LLC framework (Language, Literacy and Culture) we view curriculum as the result of the tension between various ideologies and the conscious actions undertaken by the cultural workers at the centre of the diagram – namely by teachers, students, and the communities of which they are part. The largest area represents the context of education and curriculum and includes culture, particularly, the languages in which, the literary practices through which education occurs.

Curriculum, as Michael Apple (2004) remains us, is never neutral. On the contrary, the curriculum selected by schools, and implemented by teachers, can powerfully impact the lives of students including their life chances:

Through their curriculum, pedagogical and evaluative activities on day to day life in classroom, schools play a significant role in preferring if not generating… inequalities (Apple, 2004, p.62). Despite its strong theoretical grounding, the application of multicultural education has tended to relay on narrow notions of curriculum, instruction, culture and community. As a result, in cultural schools curriculum has frequently been reduced to discrete lessons on distinct on static culture and instructional practices have focused on specific strategies rather than overall approach. While multicultural educators and scholars continue to challenge and push these well-

intentioned but followed understandings of class, we propose that multicultural educators must also reconsider the very ways we have come to talk about identify, power and inequality.

Multicultural education, viewed comprehensively and critically, is a persistent reminder to educators and researchers that we cannot leave the marginalized, the most vulnerable, and the most improvised of our students languishing while theorists toss around heady semantics that take no action towards social change. Likewise, postmodernism with its focus on questioning boundaries and disarming grand narratives reminder multicultural educators that identities and cultural instructs are fluid and porous and that relationships to knowledge and truth are unstable.

IV - Redefinitions of School Subject from Socio Cultural Perspectives

The subjects taught in schools enable students,

  • to understand the society in which they live - to learn how society is structured, managed, and governed, and also about the forces seeking to transform and redirect society in various ways.

• to appreciate the values enshrined in the Indian Constitution such as justice, liberty, equality and fraternity and the unity and integrity of the nation and the building of a socialist, secular and democratic society.

• to grow up as active, responsible, and reflective members of society.

• to learn to respect differences of opinion, lifestyle, and cultural practices.

• to undertake activities that will help them develop social and life skills and make them understand that these skills are important for social interaction. In textbooks and in the classroom, the content, language, and images should be comprehensible, gender-sensitive, and critical of social hierarchies and inequalities of all kinds.

Primary Stage

Classes I and II

For these primary grades, Socio-cultural perspectives will be explained as integral parts of languages and mathematics. Children should be engaged in activities to understand the natural

and social environments through illustrations from the physical, biological, social, and cultural spheres. The language used should be gender-sensitive. Teaching methods should be in a participative and discussion-oriented mode. For example, storytelling, painting, dance, song, and music can all be part of the teaching-learning process. A Teachers' Handbook should be prepared with examples of activities that promote the development of concepts and teach sensitivity towards Socio-cultural concerns.

Classes III to V

For these grades, the subject Environment Studies (EVS) will be introduced and will be constituted by a discussion of the Socio-cultural perspectives. . In the study of the natural environment, emphasis will be on its preservation and the importance of saving it from degradation. The fact that the social environment is constructed by human beings will be emphasized. Children will begin to be sensitized to social issues like poverty, child labour, illiteracy, and caste and class inequalities, in rural and urban areas. The content should reflect the day-to-day experiences of children and their life worlds. At this stage, all concepts taught should be activity-based. Activities and textual material should complement each other. Activities should be related to examples from local surroundings. A Teachers' Handbook should be prepared that gives clear directions on how to handle different topics.

Upper Primary Stage

At this stage, the subject areas of the social sciences may be introduced simultaneously to contemporary issues and problems. Emphasis needs to be given to issues like poverty, illiteracy, child and bonded labour, class, caste, gender, and environment. Geography and Economics may together help in developing a proper perspective related to issues concerning environment, resources and development at different levels, from local to global. Similarly, History will be taught emphasising the concepts of plurality. The child will be introduced to the formation and functioning of governments at the local, state, and central levels, and the democratic processes of participation.

Secondary Stage

At the secondary stage, the social sciences reflect the judicial structure in the country. Responses varied from teacher to teacher, but the dominant effect was one of undermining the modern system of justice in favour of caste-based panchayats. The modern form of the judiciary is likely to be taken less seriously by teachers in their discussions with children, and it is likely that the caste panchayats will be regarded as more fair and speedy in dispensing justice. India and the learner will be initiated into a deeper understanding of the social and economic challenges facing the nation. In keeping with the epistemic shift proposed, contemporary India will be discussed from the multiple perspective including the perspectives of the adivasi, dalit, and other disenfranchised populations, and efforts should be made to relate the content as much as possible to the children's everyday lives. In History, the contributions of various sections/ regions to India's freedom struggle can be studied, as well as other aspects of recent history, in the context of developments in the modern world. Aspects of Geography should be taught keeping in mind the need to inculcate in the child a critical appreciation for conservation and environmental concerns. In Political Science, the focus should be on discussing the philosophical foundations that underlie the value framework of the Indian Constitution, i.e. an in-depth discussion of equality, liberty, justice, fraternity, dignity, plurality, and freedom from exploitation. As the discipline of Economics is being introduced to the child at this level, and it is important that the topics discussed should be from the perspective of the masses. For example, the discussion of poverty and unemployment should no longer be undertaken in terms of statistics, but instead should derive from an understanding of the elitist functioning of many economic institutions and the inequality sustained by economic relations. Also, given that this is the stage at which choices are made about which disciplines to pursue for further study, it is important that students be introduced to the nature, scope, and methods of each of these disciplines. Needless to say, the latter should not overload students with additional information, but instead should explain to them what the future study of the discipline might hold in store and link these points to the creation of desirable skills.

Higher Secondary Stage

The higher secondary stage is considered important as it offers a choice of streams to the students according to their need, interest, and aptitude. For some students, this stage may be the end of their formal education, leading to the world of work and employment; for others, this stage may be the foundation for pursuing higher education. They may choose either specialised academic courses or job-oriented vocational courses depending upon their preferences. The foundation laid at this stage should be able to equip them with basic knowledge and the necessary skill and attitude to make a meaningful contribution to any field they choose. The courses need to be designed and planned carefully, keeping in view the students' wide variety of preferences in order to make this a less stressful experience. Teachers can involve children in various activities so that they can learn certain concepts through lived experiences.

At this stage, the social sciences will include the disciplines of political science, geography, history, economics, sociology, and psychology. Commerce may include business studies and accountancy. The objectives of the social science courses at this stage may be: Local Crafts and Museums In order to make the learning of social science more enjoyable and effective, there is a need for innovations in teaching methods. Social science learning should involve visits to museums at local, state, and national levels. Students may be asked to explore the local surroundings and observe the activities of artisan communities engaged in different crafts using local skills and materials. These handicrafts may be displayed in a small corner of the school and developed into a museum. The schools could have their own social science museums. During the summer break, students may be asked to make models of historical monuments, charts indicating the effects of volcanoes or earthquakes, crossword games or puzzles. The children may paint phenomena related to the natural environment. Newspaper or magazine cuttings related to topics in the syllabus, or related information downloaded from the Internet, can be displayed. This museum could be laid out in different ways from time to time so that it does not become dated.

Students may also be involved in activities like Social Science week can be celebrated in the school, Students may be taken out to visit a nearby museum or centre of arts and crafts, to watch the night sky, observe the phases of the moon, note the timings of sunrise and sunset,

describe the duration of day and night, and record their experiences and observations in a journal reflecting socio-cultural perspectives, to visit historical monuments and sketch these monuments and write about them. The sketches can be displayed in the school, to assist students to explore their interests and aptitudes in order to choose appropriate university courses and/or careers, • to encourage them to explore higher levels of knowledge in different disciplines, to promote problem-solving abilities and creative thinking in the citizens of tomorrow, to introduce students to different ways of collecting and processing data and information in specific disciplines, and help them arrive at conclusions, and to generate new insights and knowledge in the process.

V- School Subjects and Social Justice

School Curriculum and Social Justice
Science

Many scientists support the idea that science reflects an objective and indisputable knowledge without the implication of any sociopolitical values. From this perspective, science teaching may often be based on teaching children amassed science concepts. With this view of science, it could be argued that the success or failure of students in learning science would depend entirely on their mental abilities regardless of the features of the science curriculum which are related to the social and cultural milieu of children.

Theoretical Background

Research in the field of science education has shown that science learning is related to the social, economic, and cultural status of children. In other words, students who face inequalities in their daily life such as social exclusion or poverty have less opportunities to learn science.

Analyzing Science Education Scholarship

By analyzing our fields of interest of the science education scholarship related to poverty, social exclusion, and scientific literacy for all, and pedagogy, we can highlight four pillars on which a science curriculum should be elevated, in order to guarantee children's equal absorption of the public and social wealth offered by science education. i) The first pillar is about *providing students with an adequate and coherent science content* which takes into account the broader context of democratic and humanitarian purposes of education and is fully linked to their daily life. ii) The second pillar supports teaching the Nature of Science (NOS). *Science curricula should highlight the social construction of scientific knowledge as science is a social outcome of*

the continuing changes of our society and so knowledge can change over time in the light of new evidence. In light of this, students should regard themselves not only as consumers of scientific knowledge, but also as generators of knowledge in order to bring structural changes towards a democratic and humanist society based on their socio-cultural background. iii) The third pillar sustains *the teaching of scientific methodology through which students will be able not only to follow given instructions to solve science problems, but collect and evaluate information or data*, develop scientific attitude and respond critically to familiar or unfamiliar situations in their everyday life as well. iv) The fourth pillar *maintains the engagement of students in sociopolitical action*. On one hand, *the science curriculum should include characteristics that guarantee the acquisition of scientific knowledge and competencies by all children in order that they be able to make informed decisions about socio-scientific issues*. On the other hand, *the science curriculum should ensure opportunities to all students to intervene in the structure of society by assuring that social rights such as the equal absorption of the public and social wealth, collective activism and democratic and humanist structure of society will be accessed by all students and not tuned to the needs of the dominant social or economic groups*.

Analysis of Science Curricula: The Finnish Science Curriculum

The Finnish science curriculum notes that the teaching of science content should not be limited to simply providing information concerning abstract science concepts, but linking scientific knowledge with students' everyday life-worlds. For example, students should acquire essential knowledge about the human body and its function. However, that kind of knowledge is not to be narrowed down to teaching the way particular human organs function or describing in detail the human anatomy of parts of the heart, eye, and tooth. On the contrary, knowledge about the human body is expanded towards protection of, and respect for the human body, outlining factors that either help or hinder growth and development, and exploring individual differences in sexuality, etc. In other words, science teaching objectives must form a bridge between scientific knowledge and broader socio-scientific issues as well as everyday life.

Engaging Students in Socio-political Action

The science curriculum includes objectives which focus on motivating students to become responsible, participatory and justice-oriented citizens who act collectively to confront socio-scientific issues. For instance, students are expected to recognize factors that threaten

safety in their immediate environment and act towards the protection of that environment. In other words, objectives focus on encouraging students to act in the direction of the construction of a social and natural environment that fosters the wellbeing of the community.

Features of Designing a Science Curriculum towards Social Justice

The comparative analysis of the science education scholarship and the science curricula highlights some features: i) *Science teaching objectives,* which can be used in designing a science curriculum to guarantee students' equal absorption of the social wealth given through science education. Hindering that equal absorption of the social wealth in the field of science education deprives students of accessing the social decision-making structures related to socio-scientific issues. ii) For promoting passive participation of students in science courses due to the great gap between the 'academic world' of science and students' everyday life. It can also mean a science curriculum which reproduces specific knowledge that is not important outside the school context and appeals only to a small group of students coming from a privileged socio-economic background who can acquire it through a supportive surrounding network. Moreover, it means an exclusive orientation of science education toward teaching science content without paying attention to other aspects of science education such as the Nature of Science, scientific methodology and the socio-scientific issues. In other words, we support the idea that blocking the equal absorption of social wealth of science education means *incomplete science* education and failing to prepare students to deal with problems that they will encounter in their lives. iii) It is must to design a science curriculum that values their socio-cultural background in science teaching. The inclusion of the socio-cultural background in the science curriculum is likely the factor that will help students challenge the traditional image of science in which science teaching focuses solely on memorization of data, concepts, principles and abstract applications of science. It is not enough to simply teach the same scientific concepts to all students, rather the science curriculum has to bridge effectively science and students' everyday life.

Questions for Discussion and Reflection:

1. Discuss the emergence and development of knowledge, subject and curriculum in socio-political contexts.

2. Bring out the recent changes occurred in social science and natural science curriculum in India.

3. Explain the concepts of firm knowledge, objective knowledge and subjective knowledge.

4. Find out the ways and means, the social justice is being incorporated in the secondary school curriculum.

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UNIT - III: SELECTION OF CONTENT

Objectives:

After the completion of the unit, the learners will be able to:

1. explain the need for selection of subject-matter or content of the curriculum.
2. recognize the criteria for selection of subject-matter or content of the curriculum.
3. analyse the reasons for inclusion or exclusion of a subject from the school curriculum.
4. identify the recent developments in school subject(s).

Introduction

Education influences and gets influenced by the developmental process. There is hardly any field of activity or sector of development which is not influenced by education in some form or another. Education provides broad guidelines to streamline educational processes and reflects the current needs and aspirations of society as its value system in the framework of broad human ideals. Mahatma Gandhi had visualized education as a means of awakening the national conscience to injustice, violence and inequality in the social order. In recent times, school education has emerged as an important segment of the total educational system expected to contribute significantly to the individual as well as the national development processes. In order to be effective, school education needs to be continuously reviewed and updated. In fact school curriculum is the root of this renewal process. Renewal takes place on the basis of feedback provided by researches conducted from time to time.

It is increasingly recognised that for teachers to know a school subject, they must know the theory of content, how the content was selected, framed in the syllabus, and how it can be transformed so that learners construct their own knowledge through it. Content as an element of the curriculum plays a very important role in achieving the goals of education in society and is viewed as a key element in all approaches and perspectives. The content of curriculum refers to particular facts, opinions, principles, and issues which are included in a particular subject-matter. The subject-matter includes organized knowledge, terms, information, facts, rules, principles, methods, concepts, decision, phenomena and the issues related to the same subject-matter. However, the subject-matter is an integration of cognitive, skills and affective elements.

Cognitive refers to the facts, concepts, principles, hypothesis, theories and laws. Skill refers to thinking skill as well as manipulative skills. Affective refers to values and attitude.While selecting the content/subject-matter goals need to be determined, so that it is possible to choose the suitable content, based on the goals. Through the analysis of the content/subject-matter one can develop the understanding that how the different subjects are influenced by the society, culture, and values of a nation.

Basically, the following objectives are expected to be achieved by the students by learning the different subjects at the school level.

i. To develop basic skills like reading, writing and arithmetic.
ii. To enhance students' understanding of their society, their nation, the human world, and the physical environment.
iii. To help students become independent thinkers so that they can construct knowledge appropriate to changing personal, and social circumstances.
iv. To develop in students a range of skills for life-long learning, including critical thinking skills, creativity, problem-solving skills, communication skills, and information technology skills.
v. To help students develop positive values and attitude towards life, so that they can become informed and responsible citizens of society, the country, and the world.
vi. To provide all round development of the child and to attain the objectives of education.

Criteria for the Selection of Subject-matter or Content of the Curriculum

There are seven criteria that commonly applied in the selection of subject-matter/content, subjects needed for the curricular programme or course of a curriculum. They are: (i)Self-sufficiency of Learners, (ii)Significance of Domains of Learning,(iii)Validity of the Subject-matter, (iv)Interest of the Learners, (v)Utility of the Subject-matter, (vi)Learnability of the Students, and (vii)Feasibility of Completion.

(1) *Self-sufficiency of Learners*

To help learners attain maximum self-sufficiency at the most economical manner is the main guiding principle for subject-matter or content selection. 'Economy of learning' refers to less teaching effort and less use of educational resources, but students gain more results. They are able to cope up with the learning outcomes effectively. This means that students should be given chance to experiment, observe, and do field study. This allows them to learn independently.

(2) *Significance of Domains of Learning*

The subject-matter should respond to the need and interest of the learners. It is significant, if it is selected and organized for the development of learning activities, skills, processes, and attitude. It also develops the three domains of learning - the cognitive, affective and psychomotor skills; and considers the cultural aspects of the learners. Particularly, if students come from different cultural backgrounds and races, the subject-matter must be culture-sensitive. In short, selection of content or subject-matter is to be done to achieve the overall aim of the curriculum.

(3) *Validity of the Subject-matter*

Validity refers to the authenticity of the subject-matter or content that we select. For example, inclusion of content on Computer or Information Technology is more useful than inclusion of typewriting as a skill to be learned by college students. There is a need to check regularly the subject-matter or content of the curriculum, and replace it according to the emerging trends and demands of the learners. The content should also be changed and updated according to the changing need of the society and the individual's growth.

(4) *Interest of the Learners*

Teacher must consider the interest of the learners, their developmental stages, cultural, and ethnic background. That is, the subject-matter should be learner-centered curriculum. Students' learn best if the subject-matter is meaningful to them. It becomes meaningful, if

students' are interested in it. But, if the curriculum is subject-centered, teachers have no choice but to finish the pacing schedule and teach only what is in the book. This causes uninterest in students and fails in the subjects.

(5) *Utility of the Subject-matter*

Another criterion of selection of content is the usefulness of the content or subject-matter. Students' think that a subject-matter or some subjects are not important to them. They view it useless and as a result, they don't study. So that selection of subject-matter need to be done in such a way that students' must value the subject-matter or content as useful to them.

(6) *Learnability of the Students*

The subject-matter or content must be within the schema of the learners. It should be within their experiences. Teachers should apply theories on psychology of learning in order to know how subjects are presented, sequenced, and organized to maximize the learning capacity of the students.

(7) Feasibility of Completion

Feasibility of completion means that the subject-matter can be fully implemented within the prescribed time schedule. Content should be selected by considering the real situation of the educational institutions, the government, and the society in general. Students' must learn within the allowable time and the use of resources available to them. And also, the essential content can be covered in the amount of time available for instruction. For example, when teachers have only one week to finish the unit but then, the activities may take a month for the students' to complete it.This is not feasible. Likewise, we should not offer a computer subject, if there is no provision of electricity in the area, or there are no computers available to the students, or no teachers who are experts in that field. Similarly, for example, do not offer English for Business Communication, if there is no teacher to teach the subject, English. And also, there is a need to consider the nature of the learners. The organization and design of the subject-matter or content must be appropriate to the nature of the students.

Reasons for Inclusion or Exclusion of a Subject in School Curriculum

Studying school subjects is necessary to investigate the link between school subject knowledge and classroom pedagogy. School subjects are now being considered as cultural and historical phenomenon, so it is necessary to study about them. One of the important reasons for studying school subjects is that they provide a clear picture of school knowledge and practices. Studying school subjects thus entails an understanding of the 'theory of content' that is crucial for disclosing the educational potential embodied in the content.

School subjects are aimed to maintain the academic culture and develop the intellectual capacity of students. School subjects are constructed for the primary purpose of maintaining and enhancing economic and social productivity by equipping future citizens with the requisite knowledge, skills, and capital. School subjects are created to provide students with meaningful learning experiences that might lead to liberation and cause social activity.

The inclusion or exclusion of a subject from the school curriculum too has a social history. Distinctive school subjects are built for specific purposes and are constructed in accordance with the prevailing social, cultural, and political circumstances. Teachers and students play a vital role as they have the potential to improve the contents of a subject by working in it for developing the instructional background. The educative experiences of teachers and students contribute to a large extend in transforming a school subject. Thus, it is understood that institutional selection and organizational contents are determined by the social, economic, cultural, curricular, and pedagogic necessities.

The contents of a school subject primarily comprise of the arrangements of age-appropriate information in an orderly manner, so as to fulfill the educational needs of students. A school subject is constituted with a consideration of the societal expectations and the teaching activities. A school subject is formed with a 'theory of content' aimed solely for educational purposes.

School subjects are formed according to the needs of the occupation, profession, and vocation. Therefore, specialized and applied fields like engineering, accounting, and marketing among others, are the primary sources from which the contents of school subjects are derived. Many important and independent decisions concerning the contents of school subjects are made

prior to the execution of instructional activities. In many parts of the world, traditional school curriculum is being replaced by progressive types. By studying about school subjects, it can be seen that school subjects are essentially social and political constructions.

School subjects have connection with social structure, social relations, and they have contributed in the process of cultural transmissions too. Now it is being recognized that school subjects are important sources for studying about the society and its problems. Recent researches indicates that national and local proponents of subject change face a world of culture of school subjects.

Recent Developments in School Curriculum

Changes occur regularly in the social, political and economic order and it becomes a challenge before curriculum framers and developers to assimilate and absorb new changes to meet the aspirations of the people. It means curriculum development is not a one shot affair but a continuous and on-going process. As far as India is concerned, after independence the National Council of Educational Research and Training (NCERT) took up the responsibility of developing the school curriculum in 1975. The document entitled "The Curriculum for the Ten Year School – A Framework" recommended stage-wise objectives of general education; subject-wise instructional objectives and content; methodology of teaching; instructional aids and materials; evaluation and feedback; and implications for implementation. In 1977, Ishwar Bhai Committee reviewed the Ten Year School Curriculum and recommended for the inclusion of the component, 'Socially Useful Productive Work' (SUPW) in the school curriculum, to enable the students mainly to understand the dignity of labour and to contribute for social development. In1988, National Curriculum for Elementary and Secondary Education – A Framework", was revised based on the National Policy on Education (NPE) 1986. In 2000, the "National Curriculum Framework for School Education" (NCFSE) was brought out on the basis of new emerging issues and concern at the national and global level. The documents includes context and concerns; organization of curriculum at elementary, secondary and higher secondary stages; evaluation and management of the system. It was again reviewed during 2005 to respond to new developments like curriculum load, tyranny of examination, commitment to universalisation of elementary education, etc. The NCERT developed National Curriculum Framework (NCF) with the help of National Steering Committee, twenty-one Focus Groups, and the position papers

prepared by these groups. The NCF-2005 was approved by Central Advisory Board of Education (CABE) in September, 2005,considering curriculum development is a cyclic process, it requires regular feedback through different sources including research studies for its revision and updating from time to time.

Therefore, the Curriculum for the Ten Year School Curriculum (1975), National Curriculum Framework for Elementary and Secondary Education (1988), National Curriculum Framework for School Education (2000), and National Curriculum Framework (2005) are significant milestones in the field of school education and educational policies were formulated based on these frameworks. The curriculum, syllabus and textbooks for schools are developed by the NCERT in the light of recommendations of National Curriculum Frameworks as exemplar materials. In the case of States and Union Territories, school curriculum and text-books of the NCERT are either adopted or adapted.

(a)The Curriculum for the Ten Year School – A Framework (1975)

The first attempt to develop the national curriculum for school education was initiated by the then Ministry of Education and Social Welfare in 1973 to develop the curriculum for the 10+2 pattern. For this purpose, an Expert Group was appointed. The Group was expanded in 1974 and the NCERT organized the massive exercise of curriculum development. Finally, in 1975, a curriculum with curricular inputs and curricular sub-processes was prepared entitled, "The Curriculum for the Ten Year School – A Framework." The framework provides an impetus to the teaching of environmental studies, science and mathematics as a part of general education curriculum from the primary level. The re-orientation of science teaching first initiated through the new curriculum and the development of the activity based instructional material, gradually culminated in a national movement for popularizing science among school children. The stage wise Curriculum Framework of 1975 is given below.

Table 3.1 Curriculum Framework of 1975

Sl.No	Stage	Classes	Recommended Curriculum
1	Primary	I to II	First Language
			Mathematics
			Environmental Studies (Social Studies and General Science)
			Work Experience and the Arts
			Health Education and Games

		III to V	First Language
			Mathematics
			Environmental Studies – I (Social Studies)
			Environmental Studies – II (General Science)
			Work Experience and the Arts
			Health Education and Games
2	Upper Primary	VI to VIII	First Language
			Second Language
			Mathematics
			Sciences (Life science and Physical science)
			Social Sciences (History, Geography, Civics and Economics)
			Arts
			Work Experience
			Physical Education, Health Education and Games
3	Secondary	IX to X	First Language
			Second Language
			Third Language
			Mathematics
			Sciences (Life science and Physical science)
			Social Sciences (History, Geography, Civics and Economics, etc.)
			Arts
			Work Experience
			Physical Education, Health Education and Games

(b) National Curriculum for Elementary and Secondary Education – A Framework (1988)

The second major attempt to develop national curriculum was made to respond to major thrusts and recommendations highlighted in the NPE (1986). This exercise was carried out both for elementary and secondary education. It sought to evolve a national system of education by specifying minimum levels of learning at each stage. In this framework, emphasis was also laid on continuous and comprehensive evaluation, utilization of media and technology, strengthening

and restructuring of teacher education and improvement of science education in school. The stage-wise Curriculum Framework of 1988 is given below:

Table 3.2 Curriculum Framework of 1988

S.No	Stage	Classes	Recommended Curriculum
1	Pre-Primary Education	2 Years	The basic mode of upbringing of children at this stage should be through group activities and play-way techniques, language games, number games and activities directed to promote environmental awareness, etc. These should be used to make the learning experiences joyful to the children. No formal teaching of subjects is to be undertaken at this stage.
2	Primary	I to V	One Language – the mother tongue/the Regional Language
			Mathematics
			Environmental Studies I & II
			Work Experience
			Art Education
			Health and Physical Education
3	Upper Primary	VI to VIII	Three Languages
			Mathematics
			Science
			Social Science
			Work Experience
			Art Education
			Health and Physical Education
4	Secondary	IX to X	Three Languages
			Mathematics
			Science
			Social Science
			Work Experience
			Art Education
			Health and Physical Education

Table 3.3 National Curriculum Framework for School Education (2000)

S.No	Stage	Classes	Recommended Curriculum
1	Early Childhood Education (ECE)	2 Years	This stage of education helps in preparing children for school and constitutes an important element of Early Childhood Care and Education (ECCE). It is available in various forms such as preparatory schools, nursery and kindergarten classes, etc both in private and government sectors. Learning at this stage may be characterized by group activities, play-way techniques, language

			games number games and the activities directed to promote socialization and environmental awareness among children.
2	Primary/Elementary Education(first segment)	I and II	1. One Language – Mother Tongue/Regional Language 2. Mathematics 3. Art of Healthy and Productive Living.
	Primary/Elementary Education (Second segment)	III –V	1. One Language – Mother Tongue/ Regional Language 2. Mathematics 3. Environmental Studies 4. Art of Healthy and Productive Living
3	Upper Primary	VI- VIII	Three Languages – (i) Mother Tongue/ Regional Language, (ii) Modern Indian Language, and (iii) English Mathematics Science and Technology Social Science Work Education Art Education (Fine Arts, Visual and Performing) Health and Physical Education (including Games and Sports, Yoga, NCC, Scouting and Guiding)
4	Secondary Stage	IX-X	Three Languages – (i) Mother Tongue/ Regional Language, (ii) Modern Indian Language, and (iii) English Mathematics Science and Technology Social Science Work Education Art Education (Fine Arts, Visual and Performing) Health and Physical Education (including Games and Sports, Yoga, NCC, Scouting and Guiding)

(c) National Curriculum Framework (2005)

The NPE (1986) entrusted NCERT with the responsibility of reviewing and developing the framework at frequent intervals. The review and revision of the NCF is also necessary to respond to the new development and concerns like curriculum load, tyranny of examination, commitment to universal education and address the future requirements of school education by the turn of the century. In view of the above, NCERT developed NCF, 2005 with the help of National Steering Committee and twenty-one Focus Groups namely Aims of Education; Systemic Reforms for Curriculum Change; Teaching of Indian Languages; Teaching of English; Teaching of Mathematics; Teaching of Science; Teaching of Social Sciences; Habitat and

Learning; Art, Music, Dance and Theatre; Heritage Crafts, Work and Education; Health and Physical Education; Early Childhood Education; Problems of SC & ST Children; Gender Issues in Education; Educational Technology; Education of Groups with Special Needs; Education for Peace; Curriculum, Syllabus and Textbooks; Teacher Education for Curriculum Renewal; and Examination Reforms. The NCF was approved by Central Advisory Board of Education (CABE) on September, 2005.

The focus to develop NCF was to reduce curricular burden faced by children at all stages in our school system. The Ministry for Human Resource Development (MHRD) report entitled, 'Learning without Burden' in 1993 also took the view that the sense of burden felt by both children and teachers has to do with the systemic tendency reflected in both syllabus and textbook preparation as well as in teaching and examination to treat information as knowledge. Taking cues from 'Learning Without Burden' (1993) and seeking guidance from the Constitutional vision of India as a secular, egalitarian and pluralistic society, founded on the values of social justice and equality, certain broad aims of education have been identified in National Curriculum Framework (2005). These include independence of thought and action, sensitivity to others' well-being and feeling, learning, learning to respond to new situations in a flexible and creative manner, pre-disposition towards participation in democratic processes, and social change. The fact that learning has become a source of burden and stress on children is an evidence of a deep distortion in educational aims and quality. To correct this distortion, theNational Curriculum Framework (2005)has been evolved on the five guiding principles for curriculum development : (i) connecting knowledge to life outside the school; (ii) ensuring that learning shifts away from rote knowledge to life outside the school; (iii) enriching the curriculum to provide for overall development of children rather than remain text-book centric; (iv) making examinations more flexible and integrated into classroom life; and (v) nurturing an over-riding identity informed by caring concerns within the democratic polity of the country.

Conclusion

School subjects are allowed for construction and further provide students' with rewarding experiences that contribute to their intellectual growth. The school curriculum encourages a learner-oriented approach to construct a school subject that allows students to learn according to their needs and interests in their chosen fields of study. The school subjects equip the students

with general skills and learning abilities, essential for facing the challenges of globalisation and the knowledge-based economy. The school subjects pave the way for students to broaden their perspectives, enhance their social awareness, develop positive attitudes and values, and foster problem-solving and critical thinking skills. Thus, studying school subjects stands to offer a wide horizon for students to create and explore new corridors leading to enlightenment.

Questions for Discussion and Reflection:

1. Explain the criteria for the selection of content or subject-matter of the curriculum.
2. Critically evaluate the reasons for inclusion or exclusion of a subject from the school curriculum.
3. Give a brief account on the recent developments in school curriculum with special reference to India.

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UNIT – IV: LEARNER ORIENTED CURRICULUM

Objectives:

At the end of this unit student –teachers will be able to

- understand the discipline oriented curriculum.
- reflect on the advantages of learner oriented curriculum
- acquaint with the social oriented curriculum
- organize the learner oriented curriculum.

INTRODUCTION

There are various patterns adopted by curricularists in organizing the curriculum by giving importance to a particular idea or aspect as the focus of the curriculum organization. However, the different patterns available are modification or integration of three basic design types: (1) Subject-centred designs, (2) Learner-centred designs and (3) Problem-centred designs. Each category comprises several examples. Subject centred designs include subject designs, discipline designs, broad field designs and correlation design. Learner-centred designs are those identified as child centred designs, experience designs, romantic / radical designs and humanistic designs. Problem-centred designs consider life situation designs, core designs (social function designs) and social problem designs (reconstructionist designs).

Let us now briefly discuss each of the three approaches to curriculum development in the order given above.

i) **Subject-centred approach**: The subject-centred approach is one of the most widely used methods for organizing educational experiences. In this approach, the subject matter becomes the basis around which learning experiences are organized and the mastery of subject matter becomes the basis for attainment of educational objectives.

In subject-centred curriculum, the chief responsibility of the curriculum planners is to determine the subjects to be offered by the school and the body of knowledge to be covered within each subject. For example, the subjects or the programme of studies may be divided into areas like English, Tamil, Science, Social Science, and Mathematics and so on. Another concern

of curriculum planners engaged in this activity is to devise ways of evaluating a student's mastery over the subject matter through formal tests, problem-solving situations, etc.

The subject –centred approach includes four types of curriculum designs namely Subject design, Discipline design, Broad-field design and Correlation design.

ii) **Learner-centred approach**: Learning is what we build into behaviour from experience. We learn best from those situations that help us solve our problem, satisfy our desire, fulfil our interest or meet our needs. This approach to curriculum development seeks to present through school experiences the methods which an effective citizen uses in solving problems, pursuing his interest or meeting his needs. The curriculum plan will thus focus on the emerging needs of the students in their present lives.

This approach prepares the student to face the present rather than the future. A student confronted with a problem utilizes his intelligence and experiences based on his past knowledge to reach an intelligent decision. For this, the appropriate learning experiences need to be planned which are psychologically most sound and purposeful to the student. The curriculum would consist of topics such as an understanding of changes during puberty, peer group interaction, developing self-concept, adjustment, personal values, etc. In other words, the issues should relate to the developmental stages of the student.

The learner –centred approach includes four types of curriculum designs namelyChild-centred design, Experience -centred design, Romantic or Radical design and Humanistic design.

iii) **Social problems approach**: The advocates of this approach believe that the learning experiences should be organized in terms of the major activities of the human being as he/she lives in his/her culture. This inculcates in the pupil, an awareness of the current social issues and problems and enables him/her to effectively resolve social problems. Through social-problems approach, courses may be developed in areas such as environmental problems, racism, population, communication, technology and so on. In this approach to curriculum planning/ development, learning objectives are framed after the social problem or issue has been analysed; the subject matter drawn from any source pertinent to the problem.

The social–centred approach includes three types of curriculum designs namely Life-Situation design, Core design and Reconstructionist design.

CURRRICULUM AS A DISCIPLINE

Joseph Schwab views that discipline is the sole source of curriculum and so, the curriculum is divided into chunks of knowledge which are called subject areas like English, Mathematics, Social Studies, Science, Humanities, languages and others. He used the term discipline as the ruling doctrine of curriculum development. Therefore, curriculum is viewed as a field of study and it should only consists of knowledge that comes from the disciplines; for example, Linguistics, Economics, Chemistry, among others.

Academic Discipline: Meaning

The term 'discipline' originates from the Latin words *discipulus*, which means pupil, and *disciplina*, which means teaching. Discipline is defined by the *Oxford English Dictionary* as "a branch of learning or scholarly instruction." A discipline is a branch of learning or domain of knowledge that is characterised by distinct objects, concepts, principles, theories, skills, tools and applications.

The term academic discipline can be defined as the academic studies that focus on a self-imposed limited field of knowledge. It is the subject that one teaches and researches as part of higher education is the academic discipline of that person.

An academic discipline as a branch of knowledge incorporates expertise, people, projects, communities, challenges, studies, inquiry, and research areas that are strongly associated with a given academic discipline. For example, the branches of science are commonly referred to as the scientific disciplines, e.g. physics, mathematics, computer science.

Academic Discipline: Special Features

The term academic discipline becomes a technical term for the organization of learning and the systematic production of new knowledge. Disciplines are identified with taught subjects. But every subject taught at school or at university cannot be called a discipline. There are more to a discipline that the facts and concepts of a subject taught in academic setting. There are many criteria and characteristics which indicate whether a subject a distinct discipline (Biglan, 1973). Some of the essential characteristics of an academic discipline are given below:

- Disciplines have a particular object of research (eg: politics, society, human behavior)
- Disciplines have a structure of accumulated specialist knowledge referring to their object of research
- Disciplines have theories and concepts that can organize the accumulated specialist knowledge effectively
- Disciplines use specific terminologies or specific languages adjusted to their research objects
- Disciplines have developed specific research methods according to their specific research requirements.
- Disciplines must have some institutional manifestation in the form of subjects taught at colleges or universities. It means a discipline will have academic departments and professional associations connected to it.

All these criteria may not be fulfilled by all disciplines. But an academic discipline must be perfect and should be able to accumulate more knowledge through the process of research.

Typology of Discipline

Anthony Biglan (1973) based on empirical research drew distinction between discipline based on three dimensions. First he found difference in the degree to which one paradigm exists in a discipline (hard-soft). For discipline with one important paradigm there is more consensus about method of study and content (E.g: physics) than in discipline without a single paradigm (E.g: humanities). Secondly Biglan distinguished discipline based on their degree of concern with application (pure – applied). Disciplines like education and engineering is more concerned with application to practice. Finally a distinction was drawn between disciplines concerning biological or social areas and those that are concerned with inanimate objects (life- non life).

Becher (1989) modified Biglan's typology based on first two dimensions, which resulted in four types of disciplines: Hard pure, Hard Applied, Soft Pure, and Soft Applied.

The relationships between academic disciplines and school subjects

School subjects can have different and variable relationships to academic disciplines, depending on their aims, contents, and developmental phases. Stengel (1997) identifies following relationships between academic disciplines and school subjects.

Academic disciplines and school subjects are essentially *continuous*;

Academic disciplines and school subjects are basically *discontinuous*;

Academic disciplines and school subjects are *different but related in* one of the three ways:

- academic discipline precedes school subject,
- school subject precedes academic discipline, or
- the relation between the two is dialectic.

She argues further that each of the relationships implies a curricular position, reflecting particular political and moral interests.

Distinction between academic disciplines and school subjects

Subjects are not, in fact, drawn directly or readily from their parent studies, and parent studies are not all disciplines.

The disciplines are arranged for the expedient advancement of investigations and researches, but the school subjects are organized for the facilitation of learning and teaching in particular contexts.

The formation of school subjects is driven by social and political needs.

The school subject is a 'transformed' version of the academic discipline.

The academic discipline, not the school subject, is providing the frame of reference for defining and delineating what classroom teachers need to know about the subject matter they are supposed to teach.

School subjects come first and academic disciplines later in one's learning journey from school to university.

DISCIPLINE-ORIENTED CURRICULUM

The discipline-oriented curriculum or subject-centred curriculum is a model of curriculum in which content is divided into separate and distinct subjects or disciplines, such as language, science, mathematics, and social studies. The term 'discipline-based' or 'subject-based' covers the full range of distinct subjects or fields of study, both the more traditional such as mathematics or physics and the newer areas of study, such as media education. Learners must have frequent and recurring opportunities to practice their disciplinary skills throughout their fields of study in a way that allows later courses to build on the work of earlier ones. The instructional emphasis of discipline-based curriculum tends to be on specific, current, and factual information and skills as it emerges from the discipline experts. A discipline-based curriculum approach characterises teaching practice within one subject and encourages teachers for specialization, depth of content knowledge, and integrity to the conventions of their discipline. The discipline –centred curriculum designes or subject-centred curriculum designs are by far the most popular and widely used curriculum designs. This is because knowledge and content are well accepted as integral parts of the curriculum. Schools have a strong history of academic rationalism; furthermore, the materials available for school use also reflect a content organization.

The category of subject-centred designs has the most classifications of any of the designs. The subject –centred approach includes four types of curriculum designs namely. Subject design, Discipline design, Broad-field design and Correlation design.

(i). Subject-area design

A type of subject-centred curriculum in which subject is treated as a largely autonomous body of knowledge is called subject-area curricula. This design is based on a belief that humans are unique and distinctive in their intellect; the searching for and the attainment of knowledge are the natural fulfillment of that intellect. This design pays more attention to knowledge, it divides accumulated knowledge system into subjects.

The curriculum plan appears neatly divided into subjects, which themselves frequently are subdivided into divisions corresponding to school grades and even marking and reporting periods. Thus the relative orderliness characterizes the subject design.

According to Morrison subject matter curriculum contributed most to the literacy of the individual and that literacy skills should be the focus of the elementary curriculum. This orientation to subject matter reflected a mental discipline approach to learning and a perennialist orientation to subject matter. Morrison also felt that such design could allow a student at the secondary school level to develop interest and competence in one subject area. However, he proposed that a variety of courses should be offered to address the needs of different students.

In the subject matter design, the curriculum is organized according to how knowledge has been developed in the various subject areas. With the explosion of knowledge and the resulting specializations in the various fields of knowledge, subject divisions have not only become more numerous but also exceedingly complex.

To educators, each separate subject represents a specialized and unique body of content. The basis for content organization is primarily the division of labour accepted by academic scholars, who have, over the years, agreed on ways in which to organize subject - history, anthropology, literature economics, mathematics, chemistry, and so on. It argues to organize the curriculum into lots of subjects. Each subject purposely setsforth its special qualified knowledge system.

The organization of curriculum content also assumes that these subjects are systematized primarily on chronological basis, pre-requisite learning, whole to part mastery and deductive learning.

Thus, proponents of the subjects design have going for them the undeniably strong argument that knowledge is of necessity at the base of the curriculum. Knowledge is organized into disciplines, and school subjects organized out of these disciplines can be the skeleton of the curriculum. Whether the ultimate organization presents the subjects through Morrison's 'institutions', our 'domains', or through 'new' subject organizations, it is still basically a subjects design focused on the intellectual development of the learner.

Lecture, recitation, and large group discussion are major instructional techniques utilized in this design.

This design lays emphasis on verbal activities. Knowledge and ideas are best communicated and stored in verbal form. Learning is primarily a verbal activity. The prime advantage of the design is that it introduces students to the essential knowledge of society. Also, the design is easy to deliver because complementary text-books and support materials are commercially available.

(ii). Discipline Design

Like the separate subject design, the discipline design's basis is the inherent organization of content. Whereas the subject design does not make clear the foundation basis upon which it is organized, the discipline design's orientation does specify its focus on the academic disciplines. This design plays more attention to knowledge system. The subjects are arranged logically so as to be learned and remembered by students more conveniently.

King and Brownell proponents of this design, indicate that a discipline is specific knowledge that has the following essential characteristics: a community of persons, an expression of human imagination, a domain, a tradition, a mode of inquiry, a conceptual structure, a specialized language, a heritage of literature, a network of communications evaluative and effective stance, and an instructive community.

Disciplined knowledge is the key aspect of this curriculum design. Content for the school curriculum is determined in part by identifying or creating a discipline's structure and using this foundation as a guide for selecting the school content and organizing it for learning. The school is a microcosm of the world of intellect and that the disciplines reflect that world. Even though proponents of the discipline view as necessary experiencing the disciplines in the school, they stress understanding the conceptual structures and the processes of the disciplines. This is perhaps the essential difference between the disciplines design and the subject matter design. In this discipline design, the students experience the disciplines so that they can comprehend and even conceptualize, whereas in the subject matter design the students are considered to have learned if they just acquire knowledge and information.

In the discipline design students are encouraged to see the basic logic or structure of each discipline – the key relationships, concepts, and principles – and to understand the discipline's modes of inquiry. To Bruner, learning occurs when the student recognizes the key ideas and fundamental principles of a discipline and notes the interrelationships of these ideas and also their applicability to many situations. The learner, by recognizing the fundamental and general ideas that constitute the structure of the discipline, will be able to continually broaden and make more sophisticated his or her knowledge.

A most attractive notion of the disciplines approach expounded by Bruner was that "any subject can be taught in some effectively honest form to any child at any stage of development" Contrary to what many persons had held, Bruner argued that students are able to comprehend the fundamental principles of any subject at almost any age. And children can thus understand the structure and operations of a discipline at any age-such understanding does not need to await adolescence or adulthood.

(iii). Broad - field design

The broad field design eliminates the sharp demarcations that exist in the traditional subject design; it seeks rather to bring together into a broad organization of the subject matter, the knowledge and understanding pertinent to whole area of study. It represents an effort to "fuse" and "integrate" the subject matter of closely related disciplines or school subjects.

The basic consideration in Broad field design is of ways to bring into a broad organization of those subject matter elements which have certain relationship. It fosters actual 'fusion' of closely related knowledge. The brining out of 'apparent ties' tend to make learning more meaningful.

(iv). Correlation design

Correlation is a design employed by those who do realize that there are time when separate subjects require some linkage in order to reduce fragmentation of curricular components. Correlation is an attempt to eliminate the isolation and compartmentalization of subjects without radically overhauling the subject curriculum. It emphasizes on giving the relationship between the knowledge to the learner.

Almost any part of the curriculum can be organized in this design. Courses in literature can be correlated with courses in art and music by connecting them through various themes, such as Romanticism. Sciences and Mathematics are easily correlated because Mathematics provides a powerful tool for dealing with science content. But, not all correlated designs link content from different subject fields. Courses from within the same field – such as history and geography or history and sociology – can be correlated as well. Because correlated subjects maintain their identity, however a true curriculum synthesis does not take place. Knowledge of the subjects is by nature inter-related and interdependent. So, the subjects should be taught by combining correlating their identical contents to the learners.

Advantages and Disadvantages of Discipline Oriented Curriculum

Advantages

The utilization of the disciplines/subjects design is well known and has been described at various points in this unit. To summarize these references, we suggest two generalizations: 1) knowledge from the disciplines as reflected in the organization of school subjects has been and remains the dominant design of curriculum planning; 2) many curriculum elements called subjects have been created to meet curriculum needs that reflect the cultural heritage.

The subject constitutes a logical and effective method of organizing learning and of interpreting and systematizing new knowledge and facts.

The subject curriculum is most appropriate for developing the intellectual powers of the individual.

The subject type of curriculum organization is consistent with certain basic concepts of the educational process. It gives room for rational thinking on the part of the learner.

The subject curriculum best utilizes the accumulated heritage of a race.

The subject curriculum is backed by long tradition and is widely accepted.

The subject design is more readily used by present day teachers.

Curriculum planning is simpler and easier in the subject oriented curriculum.

Evaluation of the educational programme is readily carried on in the subject type of curriculum.

Disadvantages

Logical systematic organization of subject matter is not an appropriate psychological organization. Probably the chief limitation of the subjects design, however well planned and implemented, is the lack of direct relation of the organized subject matter to the problems and interests of the learner. Hollis Caswell stated that 'the conventional curriculum framework is the greatest single obstacle to the development of a program in the high school which provides the necessary assistance to youth in achieving in actual living the various developmental tasks which our society demands.

Other limitations of the subjects due to the schools' tendency to fix them inflexibly and separately have occasioned many criticisms and limitations. For example, Beauchamp's review of curriculum design theories noted the absence of adequate plans for relating the subjects as taught to particular students day by day.

Furthermore, the new subject matter, with its emphasis on inquiry and problem-solving, frequently has been introduced in inflexible school organizations poorly adapted to achieving such goals. Eisner's review of the curriculum reform movement noted the student resistance to academic prescriptions:

The emphasis on the academic discipline and on discipline-generated problems in contrast to problems generated from the interests of the student as person and as citizen is now being brought into question as students are becoming more vocal and less willing to accept the educational prescriptions of academics and school-board members a generation or more older than they.

LEARNER ORIENTED CURRICULUM

A type of curriculum that focusses on the needs, attitudes self-expression and instinct motivation is called learned-oriented curriculum.

Progressive education gave impetus to student-centered curricula. Progressive educators believed that when the interest and needs of learners were incorporated into the curriculum,

students would be intrinsically motivated and learning would be more successful. This does not mean that students' whims or passing fads should dictate the curriculum.

The term *learner* refers to the role that is played by the constituency of students in a program: learners as a collective group, and as a term that refers to each individual's unique attributes as they play this role of learner. A learner-oriented curriculum addresses both definitions of learner. The term "oriented" refers to the idea that the course of study will be based on needs and concerns of students.

Implied in the implementation of a learner-centered curriculum is that it facilitates learning about curricular decision making processes, infused in both program decisions and course relevant decisions. Learners play an active participatory, knowledgeable role; participation includes knowledge development in the area of learning and curriculum design. In a learner-centered curriculum students will be furnished opportunities for making informed curriculum decisions. The faculty role will be adjusted to accommodate the new role of the student. The definition of a learner-centered curriculum must include a set of learning experiences that will allow students to participate more fully in the arrangement of their own learning experiences.

Life has boundless experiences. Every moment human or child gains experience, from experiences we learn and modify our behavior. Therefore, education is termed as reconstruction of experiences. In the field of curriculum, various experiences are to be taken into account for a suitable educational system. Through experiences child learns the lessons of life and becomes active in his day-today programmes.

Overall, the experiences are divided into two types: direct and indirect. These are given below.

(i) Direct Experiences:

The child learns directly when he actively participates in teaching-learning situation. While organizing picnic, excursion and working in laboratory, the child learns.

(ii) Indirect Experiences:

Sometimes we learn from different sources. The sources may be newspaper, radio, T.V. and others. The child gets knowledge indirectly. These are second-hand information but true.

Importance of learner-oriented Curriculum:

Learner-oriented curriculum is framed according to the psychological bases of education.

The child gets direct experience.

It creates a social environment.

It develops social qualities like cooperation, sympathy, love, belongingness etc.,

The education is providing according to the needs and necessities of the child.

The child comes in direct contact in life situations.

Experiences are generated out of curiosity.

It develops group loyalties and team spirit.

It helps to solve the social problem of life.

Therefore, modern educationists and curriculum planners give importance to learner - centeredness in education and curricular programmes.

The advantages of learner oriented curriculum

When a classroom operates with student-centered instruction, students and instructors share the focus. Instead of listening to the teacher exclusively, students and teachers interact equally. Group work is encouraged, and students learn to collaborate and communicate with one another.

- Students learn important communicative and collaborative skills through group work.
- Students learn to direct their own learning, ask questions and complete tasks independently.

- Students are more interested in learning activities when they can interact with one another and participate actively.
- Learner-oriented curriculum engages students in the hard, messy work of learning.
- Learner- Oriented Curriculum   includes explicit skill instruction.
- Learner- Oriented Curriculum encourages students to reflect on what they are learning and how they are learning it.
- Learner- Oriented Curriculum motivates students by giving them some control over learning processes.
- Learner- Oriented Curriculum encourages collaboration.
- In the learner-centred designs, all basic motivational factors such as needs, concerns, problems and interests of the learners are used as bases for selecting, guiding and evaluating the learning experiences of pupils. This need approach to curriculum organization is psychologically sound.
- The need approach provides functional learning that are directly related to the life experiences of the individual.
- The need approach contributes to the attainment of many of the desired outcomes of the school program in terms of ways of working, development of democratic values, attitudes, appreciations and the like.
- This approach places the emphasis primarily on the growth and development of learners.
- This approach best emphasizes the mental hygiene concept of guiding development.
- This approach provides for better integration of learning activities.

SOCIAL-ORIENTED CURRICULUM FOR SOCIAL RECONSTRUCTION

B.O.Smith., W.O.Stanly and J.H.Shores define curriculum as a "sequence of potential experiences set up in the schools for the purpose of disciplining the children and youth in group ways of thinking and acting".

The social-oriented curriculum is meant to reach out beyond the classroom and into the community where the world can be changed by students and teachers. The curriculum is based on social issues and the goal of the curriculum is to explore and solve those isssues.

Reconstructionsists feel that the curriculum should address contemporary social problems and even social action projects aimed at reconstructing society. Many such educators consider themselves to be in social orientation camp, or what some have called social Reconstructionism. These individuals, interested in the relation of the curriculum to the social, political and economic development of society, believe that through the curriculum, educators will effect social change and ultimately create a more just society.

Social action through the school curriculum seems to us directly related to the educational philosophy of reconstructionism, as far removed as that philosophy is from the other socially focused designs we have considered. That is, while the social activities and community-centred approaches aim toward social improvement, they do not call on the schools to lead in social action and reform movements as does reconstructionism.

Brameld outlined the major features of this approach to curriculum. He noted that reconstructionists were committed to creating a new culture. Brameld was convinced that in the midst of a revolutionary period-the times demanded that educators harness the school for social reconstruction. The continuing problems at the national and global level – war, poverty among affluence, crime, racial-conflict, unemployment, political oppression, and disregard for the environment – all called for a major shift in society. If society was to survive, it would be because the common people in the industrial system – and the public service system – would gain control. Once in control, these persons would release and equitably use society's resources to solve the problems of democracy. Brameld placed the working people, in a new sense of collective strength, in control of all principle institutions and resources. This was necessary if the world was to become genuinely democratic. He challenged teachers to join forces with these organized working people.

Brameld also believed that the school should help the individual to develop as a social being and also as a skilled planner of the social reality. The individual must come to learn that he or she must satisfy his or her personal needs through social consensus. The schools not only had this obligation to educate children in the value of the collective they also needed to point out the urgency for the change.

The fact that reconstructionists stress the notion of change and the needs to plan for tomorrow bring in mind a series of pressing questions raised by two great reconstructionists, Virgil Clift and Harold Shane, as they explore new directions for Educators and new decisions for curriculum specialists.

1. What policies shall govern our future use of technology?

2. At a global level, what shall be our goals and how can we reach them?

3. What shall we identify as the 'good life'?

4. How shall we deploy our limited resources in meeting the needs of various groups of people?

5. How shall we equalize opportunity, and how shall we reduce the gap between the 'haves' and 'have-nots'?

6. How can we maximize the value of mass media, especially television?

7. What shall be made of psychological, chemical and electronic approaches to behaviour modification?

8. What steps can we take to ensure the integrity of our political, economic and military systems?

9. What, if anything, are we willing to relinquish, and in what order?

10. And, what honourable compromises and solutions shall we make as we contemplate the above questions?

These questions deal with social issues that are generic – meaning they were relevant yesterday, they are relevant today and they will be relevant tomorrow and they are relevant for most school subjects and grade levels. The way we deal with these issues or problems will make the difference about the society we are and will become.

The social reconstructionist curriculum has the primary purpose of engaging the learner in analyzing the many severe problems confronting humankind. However, the exact content and objectives are to be decided by those who actually create such a curriculum. The curriculum is to engage students in a critical analysis of the local, national, and international community. Also,

attention is to be given to the political practices of the business and government groups and their impact on the economic realities of the workers. Such a curriculum must propose industrial and political changes that will ultimately modify the social fabric of the nation and perhaps the world.

Advantages and Shortcomings of Social-oriented curriculum

Advantages

1. There are two primary arguments for socially-centred curriculum designs: i) they can directly contribute to the needs of society for concerns and are therefore of great significance and interest to students.

2. The advocates of this approach believe that curriculum workers should organize learning experiences in terms of the major activities of mankind as he lives in culture. Thus this approach provides for learning experiences that are closely related to the life activities of learner.

3. It is more likely that under this design the school would utilize a great deal of real experience, providing a wide variety of learning activities outside the school itself. Therefore, the learning experiences are more significant and meaningful to the learner.

4. This approach contributes directly to the social obligations of the school. Since the school has a primary responsibility to perpetuate the basic social values held by the society, the advocates of this design feel that it best enable the school to discharge this obligation.

5. This approach provides for better integration of learning experiences since the units of study would utilize whatever specialized aspects of subject matter might be pertinent to the problem under consideration.

DESIGNING LEARNER-CENTRED CURRICULUM

H.Caseweel and D.Campbell define curriculum as "all experiences children have under the guidance of the teachers", In this regard, curriculum should contain all the experiences needed by the children to learn, and a teacher should only act as a guide or facilitator.

All curricularists are concerned with creating curricula that are valuable to students. In response to those educational planners who consider that in creating curricula of value one must emphasize subject matter, educators early in the 20th century asserted that students are the centre or focus of the programme. Supporters of this posture, largely progressives, advocated what have come to be called learner-centerd design. The emphasis on the child displaced the emphasis on subject matter. In addition, when subject matter was presented, it was no longer separated into "narrow" divisions but was "integrated" around units of experience or activity. The idea that a solution to a problem required using methods and materials from several subject fields was inherent in the learner-centered curriculum. Learner-centred designs include child-centred designs, experience designs, romantic or radical designs and humanistic designs.

(i). Child-centred Designs

Child-centred curriculum means the children take command of their own learning. Teachers are there to proved support and facilitate the child's learning but children determine the direction of their own learning following their natural curiosities, interests and passions.

At times, especially when the learner-centred design was first gaining a foothold in educational thinking, its advocates insisted that virtually all school learning activities should be centred on the felt needs and interests of the child. Many of these early advocates rejected the traditional notion of the child as a miniature adult and accepted the romantic metaphor of the child as a flower that would unfold naturally with the proper "educational gardening."

Rousseau wrote, "God makes all things good; man interfere with them and they become evil," But Rousseau was not for child anarchy. He called for "well – regulated liberty" that was to be assumed within the competence levels of the child. Teachers were thus to pique a child's curiosity by providing direction using means that were appropriate for the developmental stage of the child. Rousseau noted that as a child approaches adolescence, "much skill and wisdom are required to lead him toward theoretical studies." Teachers were to provide the pupil with opportunities to observe nature and learn on his own. "Put the problems before him and let him solve them himself…Let him not be taught science, let him discover it"

Proponents of this design also drew on the thinking of some other early pedagogical giants. Heinrich Pestalozzi and Friedrich Froebel argued that children would attain self –

realization through social participation; they voiced the principle of learning by doing. Their social approach to education furnished a foundation for much of the work of Francis parker.

Parker believed that the methods of instruction should be patterned by the child's natural approach to learning. He suggested that because children learn to speak a language by using words, they should be taught reading by a word method. Thus, teachers were encouraged to perfect ways of involving children in conversations in order to teach reading. To teach geography, Parker urged teachers to take children on field trips and have them make sketches of landscapes and simple maps. This would be more productive than reading a textbook. This approach, which became known as Quincy system, attracted national attention.

William Kilpatrick emphasized social purpose in learning through project method. He argued that "if teacher want to educate to think and plan for himself, then let him make his own plan".He emphasized self -directed learning.

John Dewey suggested that the curriculum should be organized around human impulses- the impulse to socialize; the impulse to construct; the impulse to inquire, to question, to experiment, and the impulse to express or to create artistically. Dewey, like Parker, viewed education as a social process that served a social function. Through education the individual had his or her capacities freed so as to achieve social aims. Dewey viewed the development of individuality in the child, the person, as something developing continuously, not something given all at once and readymade. He emphasized the guidance of teacher in the process of learning by students

Progressive Education Association Commission on Secondary Curriculum (New York, 1958) has classified the needs of children into four broad areas:

1. Area of personal living

   a. The need for personal health

   b. The need for self-assurance

   c. The need for a satisfying world picture and a workable philosophy of life.

   d. The need for a range of personal interests

   e. The need for aesthetic satisfaction

2. Immediate persona social relationships

   a. The need for increasingly mature relationship in home and family life, and with adults outside the family

   b. The need for successful and increasingly mature relationship with age mates of both sexes.

3. Social – Civic relationships

   a. The need for responsible participation in socially significant activities.

   b. The need for social recognition

4. Economic relationships

   a. The need for emotional assurance of progress towards adult status.

   b. The need for guidance in choosing an occupation and for vocational preparation.

   c. The need for wise selection and use of good and services.

   d. The need for effective action in solving basic economic problems.

The curricula that focusses on these common needs of the students are called Child-centred Designs. It is disgned to develop the individual and social qualities of a student rather than provide a generalized information or training by the way of prescribed subject matter.

(ii). Experience-centred Designs

Experience-centred curriculum designs closely resembled the child-centred designs in that they used the concerns of children as the basis for organizing the children's school world. However, they differed from child-centred designs in their view that the interests and needs of children cannot be anticipated and, therefore, a curriculum framework cannot be planned for all children. After the children arrived at school, programs could then be created that were focused on their unique interests. The unique need and interests of the children would determine the actual curriculum. Growth and learning were considered to be completely dependent on the active participation of children in activities that were suitable with their unique needs. Subjects were only furnished to help children solve problems of their own choosing.

The teacher was responsible for identifying and cultivating children's unique interests, even forming new ones that were prized by the community and consistent with the evolution of society.

Many current advocates of the child-centred design have however taken unfavourable position when considering their design in relation to the subject-centred design camp. They assume an either or posture – one either supports a design with content at the center or a design with the child at the center. Many have counseled against such an either – or stance. For example, Dewey pointed out that there were false ideas in both camps. The learner was not a "tabularasa" - a passive receiver of established subject matter content. Neither was the learner the starting point, the center and the end of school activity.

Dewey argued that educators had to attend to the subject matter of the curriculum. The various studies incorporate the cumulative outcomes of the efforts, the strivings and the successes of the human race generation after generation'. But, educations could not ignore the child in curriculum design because the child had to be viewed as fluent, embryonic and vital: 'Abandon the motion of subject-matter as something fixed and readymade in itself, outside the child's experiences; ease thinking of the Child's experiences as something hard and fast … and we realize that the child and the curriculum are simply two limits which define a single process. Just as two points define a straight line.

Several current curriculum specialists have argued that we need to meld our curricular concerns as relating to both the subject matter or content of the curriculum and the child and his or her needs and experiences. In their definition, Tanner and Tanner identify the curriculum as the reconstruction of knowledge and experience, systematically developed under the auspices of the school. Other curriculum reformers have translated the ideas of the experience movement into courses emphasizing touching, feeling and Gestait psychology. Still others have emphasized life experiences, with credit for working in community based, career-based activities intended to prepare students for adult responsibility and work and courses that deal with social problems and personal experiences.

(iii). Romantic (Radical) Designs

The radical reformers(Paul Goodman,A.S., Neill, Ivan Illich, John Paul) expressed considerable distain toward established method of schooling, compulsory schooling, adult authority and school rules. They referred to students as prisoners, to teachers as prison guards (who disliked their students) and to schools as prisons (which keep youths locked up, restricted from free expression and democratic procedures). In general, school is considered to be a highly discriminatory place that sorts and tracks students for various jobs that extend class differences in society.

These radical reformers really seek to do away with the notion of a planned curriculum; they propose instead to center all experiences in the school on the children's present needs. The school would provide opportunities to learn and possible contents to be considered, but all would be arranged as a 'smorgasboard'. The children would pick what they need and decide what they need. As Holt argued, we cannot know, at any moment what particular bit of knowledge or understanding, child needs most and best fits his model of reality. Only he can do this. The child may not be expert at these decisions, but he can do it a hundred times better than we can. For Holt, adults don't plan the learning experiences, rather they let the child know what is available and where he can look for it.

In lieu of school, Ivan Illich recommends small learning networks characterized by the following: Educational objects – that is, shops, libraries, museums, art galleries, and so on – that are open to learners; peer matching that is, identifying and brining together students who wish to engage in a particular learning activity; skill exchanges – that is, exchanges between those who are competent in a particular skill, and who wish to teach it, and those who wish to learn it; and educators-at-large – that is, counselors who serve as advisors to students and parents and intellectual initiators and administrator who operate the networks.

Ivan Illich has stimulated large numbers of disciples to further the idea of deschooling, and a good deal of radical reform literature related to the political and economic concept of educational revisionism.

The social issues according to Counts, involved racial and class discrimination, poverty and unemployment – and progressive education had ignored these issues. The social issues

today are similar, although the list is larger; racial, ethnic and sexual inequality; poverty, unemployment, and welfare; computers and technology; political oppression and war; the threat of nuclear disaster; environmental pollution; disease, hunger and depletion of the earth's resources.

According to Brameld, students and teachers must not only take positions; they must also become change agents to improve society. As for the curriculum, it had to be transformed to coincide with a new socio-economic-political education; it had, in other words, to incorporate realistic reform strategies. For reconstructionists, analysis, interpretation and evaluation of problems are insufficient; commitment and action by students and teachers are needed. Society is always changing, and the curriculum has to change; students and teachers must be change agents. A curriculum based on social issues and social services is ideal.

The reconstructionists, including such recent proponents as Mario Fantini, Harold Shane and Alvin Toffler, seek a curriculum that emphasizes cultural pluralism, internationalism and futurism. Students are taught to appreciate life in a world of many nations – a global village – with many alternatives for the future. A reconstructionist program of education: (1) critically examines the cultural heritage of a society as well as the entire civilization; (2) is not afraid to examine controversial issues; (3) is deliberately committed to bring about social and constructive change; (4) cultivates a future planning attitude that considers the realities of the world; and (5) enlists students and teachers in a definite program to enhance cultural renewal and interculturalism. In such a program, teachers are considered the prime agents of social change, cultural renewal and internationalism. Teachers are organized not to strengthen their own professional security, but rather to encourage widespread experimentation in the schools and to challenge the outdated structures of society. They are considered to be the vanguard for a new social order – somewhat utopian in nature.

(iv). Humanistic Design

The humanistic model of education stems from the human potential movement in psychology. Within education it is rooted in the work of Arthur Jersild, who linked good teaching with knowledge of self and students, and in the work of Arthur Combs and Donald Snygg, who explored the impact of self-concept and motivation on achievement. Other names

for this orientation have been affective education, open education and existential education. The focus of humanistic designs has been on the learners-especially students' self-concepts.

A humanistic curriculum emphasizes affective rather than cognitive outcomes. Carl Rogers assumes that people can enhance self-directed learning by drawing on their own resources to improve self-understanding, to learn self-concepts and basic attitudes, and to guide their own behaviour. The educators' task is to set the educational environment such that these personal resources can be tapped. Such an environment encourages genuineness of behaviour, empathy and respect for self and others. Individuals given such an environment will naturally develop into a fully functioning person. Individuals able to take self initiated actions and responsibility for those actions is capable of intelligent choice and self direction. Furthermore, having acquired knowledge relevant to the solutions of problems, these persons are critical learners. They are also able to approach problem situations with flexibility and intelligence and to work cooperatively with others. They are internally guided with regard to their socialization process. They do not wait for or work for the approval of others.

Advocates of humanistic education contend that the present school curriculum has failed miserably by humanistic standards, that teachers and schools are determined to stress cognitive behaviour and to control students not for their own good but for the good of adults. Humanists emphasize more than affective processes; they seek higher domains of consciousness. But they see the schools as unconcerned about higher planes of understanding, enhancement of the mind, or self-knowledge. Students must therefore turn to such out-of-school activities as yoga, transcendental meditation, group encounters, psychotherapy, and sexual therapy.

Humanists would attempt to form more meaningful relationships between students and teachers; they would foster student independence and self-direction, and they would promote greater acceptance of self and others. The teachers' role would be to help learners cope with their psychological needs and problems, to facilitate self understanding among students and to help them develop fully. This approach adds the affective component to the conventional subject matter curriculum that is already in place. Those who support this design do not favour either content or experience or intellect or feeling; rather, they strive to blend the subjective or intuitive with the objective. They urge that the curriculum be so organized as to provide students with

more alternatives from which they can choose what to feel. Students are challenged to take responsibility for and to appreciate other choices, and the power to make choices.

This approach stress participation; it emphasizes power sharing, negotiations, and joint responsibility. It is essentially non authoritarian. It also stresses the whole person and the integration of thinking, feeling and acting. It centers on the relevance of subject matter in the light of students' basic needs and lives. Throughout the curriculum, students are confronted with situations that make them realize that the development of self is a legitimate objective of learning.

Weinstein and Fantani recommended three tired structure in curriculum. One tier is comprised of reading, computation and writing skills. The basic subject matter of the subject matter curriculum is found at this tier. The second tier consists of those activities designed to draw out the learners' latent talents and abilities. This tier is highly individualized, as is the first tier. It stresses the development of individual creativity and the exploration of interests. The third tier is concerned with group inquiry. It consists mainly of social issues and problems that are related to the self in society. Here students get a chance to explore who they are as individuals and as members of a group. They analyze issues and identify common themes. They can develop their own personalities, increase their skills in interpersonal relations, and become more cognizant of their feelings and concerns.

Comparison of Discipline-oriented, Learner-orientedand Social-oriented Curriculam

Sl. No.	Discipline-oriented Curriculum	Learner-oriented Curriculum	Social-oriented Curriculum
1.	The knowledge exposition and traditional knowledge are the bases of curriculum design. Thus, this design emphasizes the role of organized knowledge.	The concerns, needs, interests and motives are the bases of curriculum design. Thus this is performance based design.	The social-oriented curriculum is the socially focused designs based on social activities, social functions or community life. It exhibits an organizational pattern derived from studies of group. The cultural traditions, social needs and problems of living are the bases of curriculum design. This design emphasizes society.
2.	The subject matter becomes the basis around which	The activities become the basis around which	The learning experiences should be organized in terms of the major

	learning experiences are organized and the mastery of subject master becomes the basis for attainment of education objectives.	learning experiences are organized and promoting all-round development of personality becomes the basis for the fulfillment of educational objectives.	activities of the human being as he/she lives in culture.
3.	The curriculum would consist of subjects of culture. The programme of studies reflect the cultural traditions. The culture is divided into subject areas like Tamil, English, Mathematics, Science and Social Studies as in tenth standard curriculum	The curriculum would consist of topics such as an understanding of changes during puberty, peer-group interaction, developing self-concept, adjustment, personal values, etc. In other words, the issues should relate to the growth and developmental stages of the learner.	The curriculum would consist of courses which may be developed in areas such as social action, social function, environmental problems, racism, population, communication, technology and so on.
4.	Learning objectives are framed before the teaching-learning situation by the authorities or teachers. The emphasis is given upon teaching specific facts, imparting information requiring knowledge for its own sake or for positive future use.	Learning objectives are framed after the learners have been admitted in the course, the subject matter is drawn co-operatively by all learners during the learning situation from any source pertinent to the concerns of the learners. Emphasis is given upon meaning which will function immediately in improving living.	Learning objectives are framed after the social problem or issue has been analysed, the subject matter is drawn from any source particular to the problem of the society and individual learner. Emphasis is given upon solving problems of living.
5.	The child is considered as miniature of adult. This design focused on the intellectual development of the learner.	The child is considered as fluent, embryonic and vital organism. This designs is focused on all-round development of the learners	The child is considered as social unit. This design is focused on development of citizenship qualities of learners.
6.	This approach emphasis upon improving methods of teaching subject matter of specific subjects. The methods of teaching include concentration, absorption,	This approach emphasis upon understanding and improving the process of learning. The methods of teaching include learning by doing, demonstration,	This approach emphasis upon facilitating the participation and commitment of the learner in the social function and in solving social problems. The methods of teaching include sensory training, insight,

	memorization, recitation, logic, lecture, discussion and drill.	project, observations, play and field-trip.	inference, collaborative learning, social service, inductive method and generalization.
7.	Education is viewed as mental discipline and as conforming to the patterns set by the curriculum and its various associated instruments. Education is considered as schooling.	Education is viewed as psychological enterprise and as aiding each child to build a socially creative individuality. Education is considered as a harmonious, progressive and continuous process of intellectual growth.	Education is viewed as process of socialization and as enhancing each child to build a socially useful democratic citizenship. Education is considered as a reconstitution of experience giving of more socialized values through the medium of individual efficiency.

SYLLABUS

The curriculum is defined as the guideline of the chapters and academic content covered by an educational system while undergoing a particular course or program.

In a theoretical sense, curriculum refers to what is offered by the school or college. However, practically it has a wider scope which covers the knowledge, attitude, behaviour, manner, performance and skills that are imparted or inculcated in a student. It contains the teaching methods, lessons, assignments, physical and mental exercises, activities, projects, study material, tutorials, presentations, assessments, test series, learning objectives, and so on.

The syllabus is defined as the documents that consist of topics or portion covered in a particular subject. It is determined by the examination board and created by the teachers. The teachers are responsible for the quality of the course. It is made available to the students by the teachers, either in hard copy or electronic form to bring their attention towards the subject and take their study seriously.

A syllabus is considered as a guide to the teachers as well as to the students. It helps the students to know about the subject in detail, why it is a part of their course of study, what are the expectations from students, consequences of failure, etc. It contains general rules, policies, instructions, topics covered, assignments, projects, test dates, and so on.

The curriculum refers to what a teacher or instructor must teach. It involves the identification of specific concepts or ideas or techniques that must be revealed and taught to students over the course of a specific term. The syllabus is a more segmented approach on how these particular concepts will be delivered. The curriculum refers to the what, and the syllabus is more focused on how and when. Both are needed because the curriculum offers the overall goal and the syllabus proposes how to get there and when that arrival will be anticipated.

Curriculum and syllabus are of an equal importance for an institute, but there is a distinction between the two of these. Curriculum is a set of guiding principles which have been established to help the teachers/facilitators decide on the content to be taught. It not only defines the subject's content but also helps in defining methods to be used to measure each student's comprehension of the subject. Syllabus is a detailed list of concepts to be taken up in a particular grade. Curriculum is generally not accessible to students while syllabus is accessible to the students at the beginning of the term.

The basic differences between syllabus and curriculum are explained in the point given below:

The term syllabus is a Greek origin, whereas the term curriculum is a Latin origin.

The curriculum has a wider scope than the syllabus.

The syllabus is described as the summary of the topics covered or units to be taught in the particular subject. Curriculum refers to the overall content, taught in an educational system or a course.

Syllabus varies from teacher to teacher while the curriculum is same for all teachers.

The syllabus is provided to the students by the teachers so that they can take an interest in the subject. On the other hand, normally the curriculum is not made available to the students unless specifically asked for.

Syllabus is descriptive in nature, but the curriculum is prescriptive.

Syllabus is set for a particular subject. Unlike curriculum, which covers a particular course of study or a program.

Syllabus is prepared by teachers. Conversely, a curriculum is decided by the government or the school or college administration.

The duration of a syllabus is for a year only, but curriculum lasts till the completion of the course.

Sl.No.	Curriculum	Syllabus
1	**Curriculum** is a Latin term.	**Syllabus** is a Greek term.
2	**Curriculum** is the overall content, taught in an educational system or a course.	**Syllabus** is the document that contains all the portion of the concepts covered in a subject.
3	**Curriculum** is a set of courses, coursework and their content offered at an educational institution.	**Syllabus** is a descriptive list of subjects that are to be taught in a class.
4	**Curriculum** is made at the state, district or institute level.	**Syllabus** is made by individual teachers.
	Curriculum cannot be easily adjusted.	**Syllabus** can be adjusted easily.
5	**Curriculum** is prescriptive.	**Syllabus** is descriptive.
6	**Curriculum** contains information like course content, objectives, methodologies etc.	**Syllabus** contains a list of subjects to be covered, details about assignments, assessments, etc.
7	**Curriculum** is not accessible to students.	**Syllabus** is accessible to students.
8	**Curriculum** is related to the all-round development of a student.	**Syllabus** is focused towards a particular subject.

In a nutshell curriculum and syllabus are the terms of education, imparted to the students by teachers. It means the knowledge, skills or qualifications that are passed on from one generation to another. A subject syllabus is a unit of the curriculum. The two terms differ in a sense that curriculum is a combination of some factors which helps in the planning of an educational program, whereas a syllabus covers the portion of what topics should be taught in a particular subject.

Textbook

A textbook or course book is a manual of instruction in any branch of study. Textbooks are produced according to the demands of educational institutions. Schoolbooks are textbooks and other books used in schools. Although most textbooks aren't only published in printed format, many are now available as online electronic books.

A text-book is probably the cheapest and most reliable source of information. It also serves as a reference book for the teacher. It is a concise source of material for reviews. It helps the students to acquire the required information with speed. While revising his lessons pupils can work independently making use of text-books at his disposal. Further, it helps the students in thoroughly understanding the subject matter. It also helps the students to make up his deficiency because of his failure to attend certain classes due to unavoidable reasons.

A teacher can make use of the text-book to give home-work and assignments to the pupils. The text-bode specifies the standards expected to be attained by a particular class. It also gives suggestion about the use of various teaching aids and activities to be undertaken. A text-book also helps the teachers in teaching and correlating the subject with other things. It lays down the order of procedure.

In lower classes text-books with coloured illustrations provide an incentive to learning and they provide attraction for the young learner. That is why a text-book for every child has become essential equipment.

Influence of textbook

One of the major influences on curriculum- one whose importance is often underrated is the textbook. Textbooks have long been the most frequently used instructional medium at all levels of education. As such, they can dominate the nature and sequence of a course and profoundly affect students' learning experiences. Because course often reflect the text book author's knowledge and biases, curriculum developers may shape the entire course just by choosing the text book. For this reason it is important to understand factors that govern textbook writing and publication. In order to have wide application and a large potential market, textbooks

tend to be general, noncontroversial, and bland. Because they are usually written for a national audience, they disregard local issues or community problems. Aiming for the greatest number of "average" students, they may fail to meet the needs and interest of any particular group or individual. In summarizing large quantities of data, they may become superficial and discourage conceptual thinking, critical analysis, and evaluation. Furthermore, with the possible exception of mathematics text books, most quickly become outdated. Because they are expensive, however, they often are used long after they should have been replaced.

Advantages of textbooks

In spite of these criticisms, teachers rely heavily on textbooks for their class room teaching, since textbooks have many advantages. A textbook provides teachers with an outline for planning lessons; summarizes a great deal of pertinent information; enables the student to take home most of the course material in a convenient package; provides a common resource for all students to follow; includes pictures, graphs, maps, and other illustrative material that facilitate understanding; and frequently includes other teaching aids, such as summaries and review questions. Furthermore, textbook authors and publishers are increasing efforts to create materials that help teachers reach state standards. In short, the textbook is an acceptable tool if selected and used properly. However, it should not be the only source of knowledge for students, and it should not define the entire curriculum.

A textbook can serve different purposes for teachers:

(a) a core resource,

(b) a source of supplementary material,

(c) an inspiration for classroom activities, and

(d) a curriculum itself

Textbooks assist the teachers for managing a lesson. It saves time, give direction to lessons, guide discussion, facilitate in giving homework, making teaching 'easier, better organized, more convenient', and most of all, it provides confidence and security.

The learners see the textbooks as a 'framework' or 'guide'. Textbooks help them to organize their learning both inside and outside the classroom and enable them to learn 'better, faster, clearer & easier

Characteristics of a good textbook

There are three important aspects to be conceder by every teacher and learner while selecting their textbooks.

–Curriculum coverage,

–materials presentation,

–and language

Good textbooks should:

•teach learners to learn,

•be resource books for ideas and activities, for instruction/learning, and

•give teachers rationale for what they do.

•bring about an effective learning situation

Conclusion

There are several approaches through which curriculum can be designed and organized. These approaches are generally grouped into the following three categories.

- Subject-centred approach

- Learner-centred approach

- Social problems approach

The choice of a particular approach to the curriculum design indicates

- the bases of decisions about the types of experiences to be included in the educational programme.

- the role of teachers, students and other agencies in the process of curriculum planning.

- the choice of method for determining the selection and organization of learning experiences provided by the school.

- the factors influencing the selection of objectives.

- the use of subject matter or content.

QUESTION FOR DISCUSSION AND REFLECTION

1. What is Discipline – oriented curriculum?

2. Explain the concept of Learner- oriented curriculum?

3. What is Social reconstruction?

4. Discuss the directions of social oriented curriculum for social reconstruction?

5. Discuss the Disadvantage of discipline- oriented curriculum.

6. Discuss the advantage of learner- oriented curriculum.

7. Discuss the relationship between syllabus and textbooks.

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UNIT – V: LIFE ORIENTED CURRICULUM

Objectives:

- To obtain knowledge on the concept of Life oriented curriculum.
- To understand the need for Interdisciplinary curriculum.
- To examine the role of teaching of science and mathematics for national development.
- To analyse the nature of broadfield curriculum.
- To explore the importance of selection content.

INTRODUCTION

Life orientation is the study of the self in relation to others and to society. It addresses skills, knowledge, and values about the self, the environment, responsible citizenship, a healthy and productive life, social engagement, recreation and physical activity, careers and career choices. These include opportunities to engage in the development and practice of a variety of life skills to solve problems, to make informed decisions and choices and to take appropriate actions to live meaningfully and successfully in a rapidly changing society. It not only focuses on knowledge, but also emphasises the importance of the application of skills and values in real-life situations, participation in physical activity, community organisations and initiatives.

LIFE ORIENTATION

Life Orientation has been defined in the national curriculum as a holistic study of the self, the self in society, an opportunity to develop the emotional side of young people, the citizenship aspects of life in South Africa, democracy, human rights - it is actually a whole conglomeration of many different things that contribute to life orientation, not forgetting the health side, lifestyle, healthy living and physical fitness.

Life orientation is an inter-disciplinary subject that draws on and integrates knowledge, values, skills and processes embedded in various disciplines such as Sociology, Psychology, Political Science, Human Movement Science, Labour Studies and Industrial Studies.

Life orientation aims to:

➢ guide and prepare learners to respond appropriately to life's responsibilities and opportunities;

➢ equip learners to interact optimally on a personal, psychological, cognitive, motor, physical. moral, spiritual, cultural and socio-economic level;

➢ guide learners to make informed and responsible decisions about their own health and well-being and the health and well-being of others;

➢ expose learners to their constitutional rights and responsibilities, to the rights of others and to issues of diversity;

➢ expose learners to various study methods and skills pertaining to assessment processes and

➢ expose learners to an understanding of the value of regular participation in physical activity.

LIFE ORIENTED CURRICULUM

New challenges have emerged in terms of the needs of students within the Higher Education environment and the realties for which they must be prepared for in order to meet the demands of an ever changing professional arena.

The curriculum aims to develop the full potential of each learner, and seeks to create lifelong learners who are confident and independent, literate, numerate and multi-skilled, compassionate, with a respect for the environment and the ability to participate in society as a critical and active citizen.

Life oriented curriculum is unique as it applies a holistic approach to the personal, social, intellectual, emotional, spiritual, motor and physical growth and development of learners. This encourages the development of a balanced and confident learner who can contribute to a just and democratic society, a productive economy and an improved quality of life for all.

The Life oriented curriculum includes:

▪ Social transformation;
▪ Outcomes-based education;

- High knowledge and high skills;
- Integration and applied competence;
- Progression;
- Articulation and portability;
- Human rights, inclusivity, environmental and social justice;
- Valuing indigenous knowledge systems; and
- Credibility, quality and efficiency

Social transformation in education is aimed at ensuring that the educational imbalances of the past are redressed, and that equal educational opportunities are provided for all sections of our population. If social transformation is to be achieved, all have to be educationally affirmed through the recognition of their potential and the removal of artificial barriers to the attainment of qualifications.

Outcomes-based education forms the foundation for the curriculum. It strives to enable all learners to reach their maximum learning potential by setting the Learning Outcomes to be achieved by the end of the education process. Outcomes-based education encourages a learner-centered and activity-based approach to education.

The required outcomes of the learners are:

1. to identify and solve problems and make decisions using critical and creative thinking.
2. to work effectively with others as members of a team, group, organisation and community.
3. to organise and manage themselves and their activities responsibly and effectively.
4. to collect, analyse, organise and critically evaluation information.
5. to communicate effectively using visual, symbol and/or language skills in various modes.
6. to use science and technology effectively and critically showing responsibility towards the environment and the health of others.
7. to demonstrate an understanding of the world as a set of related systems by recognising that problem solving contexts do not exist in isolation.
8. to reflect on and explore a variety of strategies to learn more effectively.
9. to participate as responsible citizens in the life of local, national and global communities.

10. to be culturally and aesthetically sensitive across a range of social contexts.

11. to explore education and career opportunities and

12. to develop entrepreneurial opportunities.

High knowledge and high skills

The Life oriented curriculum aims to develop a high level of knowledge and skills in learner. It sets up high expectation of what all learners can achieve. Social justice requires the empowerment of those sections of the population previously disempowered by the lack of knowledge and skills.

Integration and Applied competence

Integration is achieved within and across subjects and fields of learning. The integration of knowledge and skills across subjects and terrains of practice is crucial for achieving applied competence. Applied competence aims at integrating three discrete competencies – namely, practical, foundational and reflective competencies.

Progression

Progression refers to the process of developing more advance and complex knowledge and skills. Each learning outcome is followed by an explicit statement of what level of performance is expected for the outcome.

Articulation and portability

Articulation refers to the relationship between qualifications in different National Qualification Framework levels or bands in ways that promote access from one qualification to another. In order to achieve this articulation, the development of each subject statement included a close scrutiny of the exit level expectations in General Education and Training Learning Areas, and of learning assumed to be in place at the entrance levels of similar disciplines in Higher Education.

Portability refers to the extent to which parts of qualification (subjects or unit standards) are transferable to another qualification in different learning pathway of the sameNational Qualification Framework levels or bands.

Human rights, inclusivity, environmental and social justice

The Life oriented curriculum seeks to promote human rights, inclusivity, environmental justice and social justice. The Life oriented curriculum adopts an inclusive approach by specifying minimum requirements for all learners. It acknowledges that all learners should be able to develop to their full potential provided they receive the necessary support. The intellectual, social, emotional, spiritual and physical needs of learners will be addressed through the design and development of appropriate learning programmes and through use of appropriate assessment instruments.

Valuing indigenous knowledge systems

Now a day's people recognise the wide diversity of knowledge systems through which people make sense of and attach meaning to the world in which they live. Indigenous knowledge systems refer to a body of knowledge embedded in the philosophical thinking and social practices that have evolved overs thousands of years.

Credibility, quality and efficiency

The Life oriented curriculum aims to achieve credibility through pursuing a transformational agenda and through providing an education that is comparable in quality, breadth and depth to those of other countries.

INTER-DISCIPLINARY CURRICULUM

In epistemological terms, the concept of interdisciplinary may be regarded as a form of co-operation between various disciplines which contribute to the achievement of a common end and which, through their association, further the emergence and advancement of new knowledge.

A knowledge view and curriculum approach that consciously applies methodology and language from more than one discipline to examine a central theme, issue, problem, topic, or experience.

In contrast to a discipline-field based view of knowledge, interdisciplinarity does not stress delineations but linkages. Meeth (1978) notes that the emphasis is on deliberately identifying the relationship between disciplines. It is a holistic approach with a tradition in Western thought that comes from Plato's ideal of unity as the highest good in all things. Interdisciplinarity nurtures a different perspective with focus on themes and problems of life experience.

With the exception of the definition for interdisciplinary, experience in the field has made me reticent to use these definitions. They represent important differences in the way the curriculum designer will shape the ultimate unit or course of study, but they are cumbersome, if not esoteric, in conversation.

Interdisciplinary education is a means of communicating knowledge, knowhow and life skills in accordance with strategy which is not confined to progression within a single discipline or several disciplines considered independently of one another.

Interdisciplinary education aims to establish an integrated curriculum, that is to say, to organize the educational process in such a way that the learner is placed in meaningful situations and engages in activities which require abilities relating to more than one subject area, so as to achieve an effective integration of this learning experience.

It is increasingly recognised that the problems of the contemporary world do not lie within one discipline, and their solution requires interdisciplinary approaches and collaboration between specialists in different disciplines. Since education is for life, and its current problems are interdisciplinary in character, they must be tackled through interdisciplinary approaches. i

THE GROWING NEED FOR INTER-DISCIPLINARY CURRICULUM

The case for a more interdisciplinary approach in education is not a recent development, and has been advanced through a variety of arguments, but there has been a recent emphasis on the importance of and need for interdisciplinary approachin education. This arises from the attempts to meet certain felt needs of the current situation and to prepare learners more adequately to shape and choose a future.

The world in which we live is a unity, but that it can be looked at in a variety of ways. The disciplines look at the world from a particular viewpoint, for a particular purpose. If we

concentrate in our teaching solely on these individual approaches, it is difficult for our students to see the world as whole, and to develop a broad understanding necessary for education. The student has to make sense of the world, to be able to operate successfully as a person, as a citizen, as a productive worker. That sense of understanding can be helped by the capacity to use the disciplines, singly and in co-operation, as appropriate.

There is an important reason to be prepared to look at the curriculum in an inter-disciplinary way. Our present disciplines arose during the nineteenth century, from older ways of describing knowledge. Developments of this century cross the old boundaries, in nuclear technology, in space research, computers and molecular biology. We cannot restrict the possibilities to dividing lines which may cease to be relevant.

The current organisation of the curriculum arose in the traditions of Europe, with an emphasis on the preparation of best. They are less appropriate as a means of preparation for a whole population, where the emphases need to be broader, including both intellectual development and aspects of productive work. In addition to the familiar areas of study the current system of education is now being asked to address quite different types of topic: environmental education, education and work, education and world peace. These are essentially interdisciplinary studies and if they are to be dealt within the institution will require that type of approach. Students increasingly are in need of courses which relate to the problems of daily living. Such problems may involve population education, drug education, sex education, interpersonal relations, etc. Problem-solving of this kind requires an interdisciplinary approach, as well as a consideration of moral and ethical issues.

Science and technology education should be associated with productive work, in order to prepare the rising generation to cope with the problems of everyday life and the community, and at the same time to foster positive attitudes to work. The importance of an interdisciplinary approach was emphasized as being essential both in education as a whole, and in the teaching of science and technology in particular which, it was stressed, should be linked with the teaching of social sciences and humanities.

BROADFIELD CURRICULUM

A broad field curriculum is a structure for achieving educational outcomes that combines related subjects into one broad field of study. The purpose of a broad field

curriculum is to highlight relationships between subjects and to integrate the learning experience. The broad field curriculum design is commonly used by schools to promote an interdisciplinary approach to learning. It helps students to see the connections between subjects. This type of curriculum emphasizes acquisition of information and coverage of content. Subjects are combined to complement one another.

Integration by broad fields of subject areas consists of the grouping of two or more subject matters that are closely related to each other to form a broad field such as communications, general science, social studies and environmental studies.

Broad-field design is most common at the K-12 level and every teacher has encounter this design. One concern with this design is depth. By combining so many subjects, the students get a shallow amount of knowledge in comparison to the deeper content of a single-subject.

NEED FOR CURRICULUM INTEGRATION

Curriculum integration refers to a variety of educational practices aimed at counteracting the adverse effects of a fragmented curriculum and has assumed a variety of shades and forms in different countries in response to their specific problems and expectations from the educational system. Conventionally, the term 'curriculum integration' has been used to demote the combination of two or more subjects to form a meaningful learning area that would help effective integration of learning experiences for the learner.

Over the past few years, the interest in and need for curriculum integration has intensified throughout the country for several reasons.

The Growth of Knowledge

Knowledge is growing at exponential proportions in all areas of study. If you look at one field, such as science, you see the remarkable degree of specialization that has resulted from research and practice. Each area of the curriculum has the blessing and burden of growth. The curriculum planner must wrestle not only with what should be taught but what can be eliminated from the curriculum. In English, there are new writers, new books, and new interpretations to consider every year. In the social sciences, there are difficult questions of selecting focal cultures, for we obviously cannot study every country in the world.

Then there are the annual state education mandates that get passed down to schools based on current problems. For example, many states now require a curriculum covering AIDS. Drug prevention curriculums have been on the books for a number of years in many states. Sex education and family life curriculums now are an integral part of the public school domain in some areas of the country. These are critical topics, but they do add pressure to the school schedule. The length of the school day in the United States has stayed basically about the same since the 1890s. We need to rethink the ways we select the various areas of study. Knowledge will not stop growing, and the schools are bursting at the seams.

The attempts at interdisciplinary work that seem to be most successful are those that address the polarity question in a different way. The question here isn't whether we should teach the classics (though that is a question worthy of genuine discussion); rather, we are considering a larger point: No matter what the content, we can design active linkages between fields of knowledge. We can teach the works of Shakespeare with an eye to the history of the times, the arts, the values, the role of science, and the zeitgeist rather than simply sticking with specific passages. The student who does not possess a literary bent may encounter *King Lear* in another subject area. Integrated curriculum attempts should not be seen as an interesting diversion but as a more effective means of presenting the curriculum, whether you wish to teach Plato or feminist literature. The curriculum becomes more relevant when there are connections between subjects rather than strict isolation.

TEACHING OF SCIENCE AND MATHEMATICS FOR NATIONAL DEVELOPMENT

Science Education and Mathematics Education share several commonalities in regards to the values, as well as several challenges. Science is seen as an essential part of culture and a powerful way of thinking. Science education is necessary for the world of work and the economy. Science development in recent decades has, and will continue to have, a significant influence on topics that have great importance for humanity, quality of life, the sustainable development of the planet, and peaceful coexistence amongst peoples. From the immediate basic essentials of life such as access to water, food and shelter, to important issues that affect us all (management of agricultural production, water resources, health, energy resources, biodiversity,

conservation, the environment, transport, communication), all have a strong science component to which everybody should have access to take part in local, regional, national and transnational decision in a meaningful way.

Every citizen needs to be able to take decisions that affect individuals, communities, regions, our countries and the world, decisions that need a science education based on an understanding of ethics and of interdependency. Thus, science learning has to be seen as necessary for the full realization of a human being. When the majority population is scientifically illiterate, it not only aggravates inequity but also presupposes the exclusion of this majority from true participation in and influence on their environment. There is a connection between national and personal development on the one hand, and increasing the quantity and quality of science education on the other hand, is not simple or direct. This shows that every society must pay particular attention to the scientific and technological education of its future citizens.

The expression the 'knowledge economy' or, more accurately, the economy built on knowledge evokes the new paradigm which characterizes the evolution of industrial nations. Economic structures, which previously were strongly connected to the manufacturing sector; today rely largely on knowledge and understanding. These are economies "in which the generation and the exploitation of knowledge has come to play the predominant part in the creation of wealth. It is not simply about pushing back the frontiers of knowledge; it is also about the more effective use and exploitation of all types of knowledge in all manner of economic activity." The spectacular change has been brought about by a number of elements that are both causes and effects of this transformation. Thus, the unequalled revolution in information technologies has given birth to an industry with powerful growth dynamics while offering unequalled opportunities for sharing and exchanging information. In practice, in today's society, enormous and growing quantities of knowledge are produced and made available and the advances in ICT are a key driver in this phenomenon. So much so that the products of the industrialized economies now integrate significant scientific and mathematical knowledge.

More and more, the knowledge linked to these competences and abilities is mathematical, scientific and technological, paralleling the knowledge involved in the very products of those economies. In this way, knowledge, especially scientific and technological knowledge, has

become the principal resources.Consequently, the new strategies for growth have knowledge as the central axis for sustainable development and so improve the quality of life of people and Science is at the heart of this knowledge growth.

Mathematics has been described as a precision tool used by all scientists in their search for a clear understanding of the physical world. Mathematics as a school subject is recognized as the foundation of science and technology without which a nation can never become prosperous and economically independent.

The National Policy on Education recommends the teaching of mathematics at all levels of education. In a similar way, the National Policy on Science and Technology envisages an education system that shall emphasize all levels and re-orient the entire society towards scientific thinking in order to develop new technologies and adapt existing ones to improve societal well-being and security.

Mathematics permeates the whole of society, and its role would appear to be one of ever-increasing importance as its help is sought in handing situations and problems, which arise outside the field of mathematics itself. Mathematics methods are no longer the prerogative of scientists, engineers, and technologists, they are increasingly being used to analyse individual behaviour, to study attitudes and trends in opinion within the society as a whole. This shows that there is no way a society or individual can develop without the knowledge of mathematics.

When national development is mentioned there is the tendency for one to equate it with economic development. National development is not synonymous with economic development rather it is a part or dimension of total development of the society. It is the extent to which a nation is able to overcome her complex socio-economic, political and cultural issues to ensure progressive changes in the quality of life of all her citizen. It is defined that development is a continuous improvement of material and human resources of a nation in order to maximize and manipulate the physical environment for the benefit of the citizenry. To this extent national development implies improvement in the living standard of each citizen.

The invention of satellite, mobile phones, the high security gadgets are the products of science and technology. Mathematics is an instrument for fostering scientific and technological advancement. The usefulness of mathematics to the ordinary man is its ability to develop his

reasoning faculty to the extent of modifying man's pattern of reasoning. Hence, the knowledge of geometry and trigonometry are the most rapid in architecture, surveying, building, modelling, sculpturing and medicine, which consist major parts of national development. Internationally, the computer usage worldwide was made possible because of the knowledge of mathematics. Computer is a facilitative technology and merely allows those who are already doing something to do more of it faster and more accurately. Quantitative techniques which are an aspect of mathematics, are those statistical and operations research or programming techniques, which help in the decision-making process especially concerning business and industry. A lot of mathematical knowledge us used in modern industries in determining which models of machines would produce greater materials at a maximum profit within minimum time.

In banks, basic knowledge of mathematics is needed for effective and efficient transaction between the bankers and their customers. Good knowledge of mathematics is essential for the manipulation of building blocks into dams, construction, machines and structures. Since man cannot do without the basic ingredients for survival, coupled with the elementary fact that mathematics is the core ingredient for all these, man must as a matter of necessity, learn, understand and apply the language of mathematics to sustain and maintain in existence. From the foregoing, the contributions of mathematics and everyday life in national development could be seen.

Thus it is clear that science and mathematics education are the essential tools for every nation's development and they are equally essential tools for sustainability of every national development.

SELECTION OF CONTENT

Based on the experiences of children – communities – their natural curiosities – their subjects.

The development of any new educational curriculum is a major challenge for any nation. Through the selection of it's content, it represents our priorities and assumptions of what constitutes "*good education*" and how we see the new form of society being realised through our children and learners.

An interdisciplinary organization of the contents to be studied, by building bridges between subjects without detracting from their specificity, is appropriate both from the objective standpoint and from the subjective standpoint. Unity genuinely exists in diversity, but its discovery through systematic mental effort will constitute an intellectual achievement. The perception of the unity in diversity, or specificity, of things thus represents an ultimate goal of the learning process and corresponds both to a need in the learner and to a concrete reality, and such a discovery is accompanied by a not inconsiderable intellectual satisfaction, since it can make for more effective teaching.

Implicit within this increased relevance of the organisation of contents to the characteristics of contemporary science and the psychological and philosophical needs of the learner is a solution to another genuine problem, i.e. the unfortunate 'slicing up' of general culture into separate parts; interdisciplinary is a way of overcoming the drawbacks arising from the juxtaposition of isolated subjects.

A good many researchers and educators rightly look to a reorganization of subjects from the standpoint of interdisciplinary as a way of increasing the efficiency of the learning process. Interdisciplinary is associated logically with other principles or characteristics of a relevant content, i.e. coherence, balance, the pleasure of learning, a forward-looking approach and the spirit of lifelong education. The strengthening of the connections between subjects helps to strengthen the role of codes of reference and codes of interpretation – these become focal points around which the information acquire outside the institution can be organised and turned to account.

Two problems in content selection often plague courses:

1. *The Potpourri Problem.* Many units become a sampling of knowledge from each discipline. If the subject is Ancient Egypt, there will be a bit of history about Ancient Egypt, a bit of literature, a bit of the arts, and so forth. Hirsch (1987) and Bloom (1987) have criticized this approach for its lack of focus. Unlike the disciplines that have an inherent scope and sequence used by curriculum planners, there is no general structure in interdisciplinary work. Curriculum developers themselves must design a content scope and sequence for any interdisciplinary unit or course.

2. *The Polarity Problem.* Traditionally, interdisciplinarity and the discipline fields have been seen as an either/or polarity, which has promoted a range of conflicts. Not only does the curriculum design suffer from a lack of clarity, but real tensions can emerge among teachers. Some feel highly territorial about their subjects and are threatened as new views of their subject are promoted. There is a need for both interdisciplinary and discipline-field perspectives in design.

To avoid these two problems an effective interdisciplinary programs must meet two criteria:

• They must have carefully conceived design features: a scope and sequence, a cognitive taxonomy to encourage thinking skills, behavioural indicators of attitudinal change, and a solid evaluation scheme.

• They must use both discipline-field-based and interdisciplinary experiences for students in the curriculum. To simply list a set of considerations for selecting interdisciplinary content would be to avoid wrestling with the complexities and possibilities for interdisciplinary work.

Based on the experiences of children – communities – their natural curiosities – their subjects.

The current environmental crisis can serve to remind us about the purpose of education: To develop knowledgeable and responsible citizens who are committed to the well-being of their communities and to the world at large. Teachers who make the shift to Environmental Inquiry are better able to guide their students along that path because this four-part approach has an innate potential to elicit students' natural curiosity about the world and to create a classroom culture of learning that is purposeful, fun, productive, and responsive students. Through an inquiry-based learning approach, teachers have the opportunity to nurture students' natural curiosity and their ability to be fully-engaged learners throughout their lives.

Experiences of the socio-cultural world also need to become a part of the curriculum. Community-based identities, of gender, caster, class and religion are primary identities, but they can also be oppressive and reaffirm social inequalities and hierarchies. School knowledge can also provide a lens through which children can develop a critical understanding of their social

reality. It could also provide them space to talk about their experiences and anxieties within their homes.

Educational institutions must be prepared to engage with communities to listen to their concerns, and to persuade them to see the educational value of such decision. The creation or recreation of knowledge requires an experiential base, language abilities, and interaction with other humans and the natural world.

Historically, a subject has been defined as a specific body of academic knowledge. This understanding of a subject laid emphasis on knowledge at the expense of skills, values and attitudes. Subjects were viewed by some as static and unchanging, with rigid boundaries. Knowledge integrates theory, skills and values. Subjects were viewed as dynamic, always responding to new and diverse knowledge, including knowledge that traditionally has been excluded from the curriculum.

The issues of adequate representation of all forms of knowledge, and emphasis on similarities, special characteristics, and the widest possible interconnections between them, become important when the subject areas are more clearly defined.

CONCLUSION

Education can play a significant role in creating general awareness about problems of development and causes of stagnation of the economy, in emphasizing self-reliance among people based on knowledge or the social and physical environment, in the revitalization of local institutions, utilization of locally available raw materials and rural technology and above all in improving the quality of life by ensuring a minimum standard for all through increase of income and employment potential (Unesco 1982).

Integration and interdisciplinary become relevant and necessary in the general education curriculum to provide the learner with a way of dealing with the knowledge explosion and of selecting and organizing this knowledge into meaningful patterns and generalizations.

Questions for Discussion and Reflection
1. Differentiate between Life Orientation and Life Oriented Curriculum.
2. Discuss the need for curriculum integration.

3. How does Broad field Curriculum influence the educational outcomes of a learner?

4. Describe the role of teaching of science and mathematics for national development

5. Critically analyse the growing need for Inter-disciplinary curriculum.

6. Enumerate the problems in selection of content.

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