

KNOWLEDGE, CURRICULUM AND UNDERSTANDING THE
DISCIPLINES

UNIT-I

a) CURRICULUM: CONCEPT AND IMPORTANCE

CONCEPT:

Definitions:

"Curriculum is a very general concept which involves consideration of the whole complex of philosophical, social and administrative factors which contribute to the planning of an educational program". -Allen

"Curriculum theory encompasses philosophy and value systems; the main components of the curriculum: purposes, content, methodology and evaluation; and the process whereby curricula are developed, implemented and evaluated"-White

Curriculum development is defined as planned, a purposeful, progressive, and systematic process to create positive improvements in the educational system. Every time there are changes or developments happening around the world, the school curricula are affected. There is a need to update them to address the society's needs.

Curriculum development has a broad scope because it is not only about the school, the learners, and the teachers. It is also about the development of society in general.

In today's knowledge economy, curriculum development plays a vital role in improving the economy of a country. It also provides answers or solutions to the world's pressing conditions and problems, such as environment, politics, socio-economics, and other issues of poverty, climate change, and sustainable development.

There must be a chain of developmental process to develop a society. First, the school curriculum, particularly in higher education, must be developed to preserve the country's national identity and to ensure its economy's growth and stability. Thus, the president of a country must have a clear vision for his people and the

Hence, curriculum development matters a lot in setting the direction of change in an organization, not only at the micro but also at macro levels. As long as the goals and objectives of curriculum development are clear in the planner's mind, cutting-edge achievements in various concerns can be realized.

An effective curriculum provides teachers, students, administrators and community stakeholders with a measurable plan and structure for delivering a quality education. The curriculum identifies the learning outcomes, standards and core competencies that students must demonstrate before advancing to the next level. Teachers play a key role in developing, implementing, assessing and modifying the curriculum. An evidenced-based curriculum acts as a road map for teachers and students to follow on the path to academic success.

Impact on Administrators

Administrators follow a detailed curriculum to help students achieve state and national standards of academic performance. Schools can lose public funding if students fall substantially behind peers at higher performing schools. The

curriculum ensures that each school is teaching students relevant material and monitoring the progress of students from all types of backgrounds.

Impact on Teachers

A school's curriculum informs teachers what skills must be taught at each grade level to ultimately prepare students for postsecondary education or a job. Understanding the big picture helps teachers align the learning objectives of their own curriculum with the school's curriculum. In the absence of a curriculum, teachers wouldn't know whether students are building a solid foundation to support learning at the next level.

Impact on Students

A curriculum outlines for students a sequence of courses and tasks that must be successfully completed to master a subject and earn a diploma or degree. Students may be more motivated to study if they understand why certain subjects are taught in the curriculum. A curriculum reassures students that they're on the right track to reaching their goals and honing desired skills.

Other Considerations

In addition to teaching students academic skills, the curriculum is also intended to teach students the importance of responsibility, hard work and responsible citizenship. Teachers in partnership with parents and community members collaborate on the development of a curriculum that will instill character in students and reinforce positive behavior.

b) PRINCIPLES OF CURRICULUM CONSTRUCTION

The Principles of Curriculum Construction are:

1. Principles of Child Centeredness
2. Principle of Community Centeredness
3. Principle of Activity Centeredness
4. Principle of Variety
5. Principle of Co-ordinations and Integration
6. Principle of Conservation
7. Principle of Creativity
8. Principle of Forward Looking
9. Principle of Flexibility
10. Principle of Balance
11. Principle of Utility

1. Principle of Child Centeredness.

As modern education is child-centered the curriculum should also be child-centered. It should be based on the child's needs, interests, abilities, aptitude, age level and circumstances. The child should be central figure in any scheme of curriculum construction. In fact, curriculum is meant to bring about the development of the child in the desired direction so that he is able to adjust well in life.

2. Principle of Community Centeredness.

Though the child's development and growth is the main consideration of curriculum construction, yet his social behaviour is also to be suitably developed, both the individual development and the social development of the child deserve equal attention. He is to live in and for the society.

Therefore, his needs and desires must be in conformity with the needs and desires of the society in which he is to live. The values, attitudes and skills that are prevailing in the community must be reflected in the curriculum. However, the society is not static. It is dynamic. Its needs and requirements are changing with the rapid developments taking place in all fields. While working for the development, this factor cannot be ignored.

3. Principle of Activity Centeredness.

The curriculum should centre round the multifarious activities of pupils. It should provide well selected activities according to the general interests and developmental stages of children. It should provide constructive, creative and project activities. For small children, play activities should also be provided.!

The purposeful activities both in the class-room and outside the class-room should be provided. It is through a net work of activities that the desired experiences can be provided and consequently desirable behavioural changes can be brought about in children.

4. Principle of Variety.

The curriculum should be broad-based so as to accommodate the needs of varied categories of pupils, so that they are able to take up subjects and participate in activities according their capacities and interests.

The needs of pupils also change from place to place. For example, the pupils in rural areas, urban areas, and hilly areas will have different needs. The needs of boys and girls are also different. So these considerations should be reflected in the curriculum.

5. Principle of Co-ordination and Integration.

Of course, the pupils are to be provided with selected experiences through various subjects and activities but these must be well integrated. Various subjects and activities have to serve the same ultimate purpose, the achievement of the aims of education. The activities and subjects should not be put in after-tight compartments but these should be inter-related and well integrated so as to develop the whole child.

6. Principles of Conservation.

One of the main functions of education is to preserve and transmit our cultural heritage. This is essential for human progress. Culture consists of traditions, customs, attitudes, skills, conduct, values and knowledge. However, the curriculum framers must make a suitable selection of the elements of culture, keeping in view their educational value and the developmental stage of pupils.

7. Principle of Creativity.

The conservation of culture helps to sustain the society. The culture should not be simply transmitted but also enriched. There should be provision in the curriculum to develop the creative powers of the child so that he becomes a contributory member society. Raymont says, "In curriculum that is suited to the needs of today and of the future, there must be definitely creative subjects."

8. Principle of Forward Looking.

Education is to enable the child to lead a successful social life. So the curriculum should not cater to the present needs of the child alone. The needs of his future life should also be considered. The curriculum should also include knowledge, skills, experiences, influences etc. which will develop in the child abilities and power to make effective adjustments in the later life.

9. Principle of Flexibility.

In our age, rapid developments are taking place in various fields. Consequently the needs of society are hanging. The content of curriculum cannot be same for all times to come. It should not be static. It must be dynamic and change with the changing times. It should reflect the latest trends in the field of education and psychology.

10. Principle of Balance.

The curriculum must maintain a balance between subjects and activities, between direct and indirect experiences, between academic and vocational education, between compulsory and optional subjects, between formal and informal education, between individual and social aims of education etc.

11. Principle of Utility.

Curriculum should be useful rather than ornamental. It should not only include subjects which owe their place in it to tradition. The curriculum must have practical utility for students. So there should be some provision for technical and vocational education in the curriculum.

The various principles of curriculum construction should be kept in mind. Various regional and national conditions should also be considered. In fact, all

considerations which will help in achieving the aims of education should be given due consideration.

c) TYPES OF CURRICULUM

1. The Activity Curriculum:

Most of the educationists have given priority on activity. Froebel, Montessori, Pestalozzi, Comenius, Rousseau insisted upon introducing creative and productive work as an integral part of curriculum. Rousseau said, “Instead of making the child stick to his books I keep him busy in the workshop, where his hands will work to the profit of his mind”.

Comenius suggested that “Whatever has to be learnt, must be learnt by doing”. Pestalozzi declared that verbal system of teaching neither suits neither the facilities of the child nor the circumstances of life. John Dewey defines “activity curriculum as a continuous stream of child’s activities unbroken by systematic subjects and springing from the interests and personally felt needs of the child”.

In activity curriculum, .subject matter is translated in terms of activities and knowledge is gained as an outgrowth and product of those activities. The child acquires knowledge, skill and attitudes through different activities.

Nature and Characteristics:

- (i) Learning through activity is more durable than through a theoretical discussion.
- (ii) Activity has occupied a central position in the curricula of the advanced countries.

(iii) In this curriculum, provision is made for a series of activities in schools suitable to various subjects.

(iv) Activities are organised on the basis of the interests and attitudes of the learners.

(v) The school becomes a workshop or a center of work for organizing different activities.

(vi) The spirit of project work, experiment and discovery should prevail in the school.

sadbhavna

(vii) Activity should not be narrowly conceived.

Advantages of Activity Curriculum:

The following are the advantages of activity curriculum:

(i) Education becomes meaningful when the learner finds activities according to his own interest and attitude.

(ii) This type of curriculum promotes team work and cooperative activities.

ADVERTISEMENTS:

(iii) It is based on the needs and capacity of the learners.

(iv) It provides emotional satisfaction.

(v) It promotes physical fitness, alertness and initiative.

(vi) It encourages school community relationship.

(vii) It develops the constructive and creative urges of the learner.

- (viii) The teacher becomes more imaginative and resourceful.
- (ix) The learners are made mindful of their progress.
- (x) It provides opportunities for the learners to utilize their leisure time fruitfully.
- (xi) It facilitates the development of different values like social, moral, aesthetic and democratic values through activities and project works.
- (xii) This type of curriculum can bridge the gap between work and education, work and life, school and society etc.

Limitations of the Curriculum:

- (i) It is not always possible to provide the necessary equipment and instruments for organizing various activities.
- (ii) Necessary field study and work are not given due weight-age.
- (iii) Students may also be interested only on the kind of work neglecting the others.
- (iv) Sometimes more emphasis may be laid on practical activities and less on theoretical knowledge.

2. Child Centered Curriculum:

The modern teaching-learning process aims at the all-round development of the child-physical, intellectual, emotional, social, spiritual and so on. It has been giving stress on the child or the learner as the center of all kinds of curricular and co-curricular activities.

The NPE 1986 has emphasized the child-centered approach, “A warm welcoming and encouraging approach in which all concerned share solicitude for the needs of the child is the best motivation for the child to attend school and learn”.

In child centered curriculum the child occupies a pivotal position. That is why, modern education is popularly known as “Paedocentric” or child centered education, particularly at the primary stage.

Characteristics of Child-Centered Curriculum:

The following are some of the characteristics of child-centered curriculum:

- (i) In child-centered curriculum the teacher gives emphasis on the child rather than the subject, he plans to teach.
- (ii) Emphasis is given on the child’s abilities, interests, growth and development.
- (iii) The child’s experiences are taken as the basis of teaching and tools of various curricular and co-curricular activities.
- (iv) The learner is provided with all kinds of learning experiences according to his capabilities and interests.
- (v) The child is to grow on his own, but the teacher is to guide and motivate him.

The teacher is to identify the abilities and interests of the child and accordingly, to provide and promote his learning experiences properly and efficiently.

The child occupies the center of the curriculum, which is the sum-total of all learning experiences provided by the school.

Advantages:

The following are the advantages of child-centered curriculum:

- i. This type of curriculum keeps more emphasis on the problem of the children rather than subject matter.
- ii. It helps correlation in learning.
- iii. There is a scope for active participation of the child in the learning process.
- iv. Play way approach helps the child to learn in a natural way.

3) Core Curriculum:

Traditionally core curriculum includes all required content areas in the school programme. More recently, the term 'core' refers to type of course such as general education, united studies, common learning's, social living and integrated programme. A curriculum based on the essential learning and a common scheme of studies is referred to as a core curriculum.

Casweel defines:

Core as "A continuous carefully planned series of experiences which are based on significant personal and social problems and which involve learning of common concern from all youth".

A.A. Douglass:

In 1990, A.A. Douglass defined core curriculum is a projection of all basic, general training of the elementary school.

H. Alberty:

There seems to be one common element in programmes that are referred to as the core. The term is applied in some fashion to all or part of the total curriculum which is required of all students at a given level. In other words, the core is used to

designate all or part of the programme of general education. The core curriculum, therefore, will be centred around certain essential learning outcomes common for all learners.

Characteristics of Core Curriculum:

The following are the characteristics of core curriculum:

- (i) It requires a great degree of flexibility in respect of content.
- (ii) It utilizes the problems of personal and social development which is common to all youth.
- (iii) The core curriculum is characterized by a common scheme of studies.
- (iv) It encourages the use of the problem solving technique to face different problems.
- (v) Learning experiences are based on local situations.

UNIT-II: ESSENTIALS OF CURRICULUM

a) Approaches to curriculum development: Subject centered, Learner centered and Community centered

Subject centered Curriculum:

Subject matter is the most used and accepted curriculum Design, it is also the oldest curriculum Design. We see the earliest example in the medieval era in the Middle Ages the monastery and Cathedrals and the organizations of the seven liberal arts in the schools of ancient Greece and Rome. The seven liberal arts were consisted of two divisions:

1. Trivium

2. Quadrivium

These subjects were broad. In the modern period the Trivium was further divided to include literature and history and the quadrivium to include algebra, trigonometry, geography, botany, zoology, physics and chemistry. In this manner subjects added one after the other so much so that in 1930 there were over 300 different subjects.

After centuries the curriculum design of the seven liberal arts are still the nucleus of the subject curriculum. In a subject base curriculum every subject is separate unit. In this kind of curriculum four or five subject are placed in curriculum and each subject has a separate teacher. Every teacher try to teach his own subject, no one intervene in the subject of other teacher

Characteristics of Subject Curriculum

Progress is measured to the extent the students learned the subject

In this type of curriculum subject matter is the most important thing to learn therefore the learning is measured by how much and well the subject matter has been mastered by the pupil. Frequent tests are given to students to check the degree of the achievement in the subject.

Predetermined uniform standard of knowledge:

There is a uniform standard for all the students to pass the subject else they will have to repeat the subject therefore the experts of the subject centered approach strongly support the minimum standards for examination so all achieved the set standard and qualify the examination. The teacher tries to help the weak students and to bring him to the set standard and pass the exam or repeat a grade.

Each subject is a separate entity (unit) with a logical organization of its own:

Importance is given to the acquisition of skills, facts and information for vocational purpose in different logically organized subjects. The teaching staff teaches different subjects and they do not discuss or plan subject together.

Practice in skills is emphasized:

The main aspect of subject base curriculum is the continues practice or drill in a specific skill, it is one of the typical characteristics of the subject base curriculum. For this purpose multiple methods are used; evaluations, Exercise session, tutoring classes are often dedicated to such type of practices and all the students are given equal opportunities to participate.

Subject matter is selected by adults/experts for teaching learning situation:

The content of the subject is selected in advance before the teaching learning process; the subject matter is logically organized from simple to complex with the help of the experts, specialists, teacher's supervisors, planners, writers and administrators.

Learning subject matter is an end in itself:

The main focus of the teachers, administrators and students are to complete the subject matter, to cover all the topics which are provided in the course outline by Listening to lectures, studying the recommended textbook. It is all preparation for examination on the part of students and teachers and it shows the influence of the subject centered approach. For the teacher to finish the textbook on time is a great accomplishment,

Requirements for the Optimum Operation of Subject Curriculum

- ü **Trained Teachers with mastery in a subjects and expert in methodology are required to teach.**
- ü **A separate classroom for each subject and each level.**

- ü **A fixed time table is required for different subjects according to importance of the subjects and age in curriculum.**
- ü **Special arrangements for guidance physical education, Indoor and outdoor activities, tours and examinations etc.**

Need of Text books and guide books for subject base curriculum.

Criticism on Subject Curriculum:

Teacher has the control over pupil experiences, Learning activities and conduct. The teacher follows the decision of others in the planning and evaluation process. The teacher and headmaster formulate the rules for the classrooms management. They demand a very stern discipline and they want a quite classroom atmosphere, teacher thinks it is the best situation for teaching learning process.

1. It is compartmentalized and fragmentary.

The critics believed that there is no unity and continuity in the subject base matter. The subject is learned in parts. Every teacher is specialist in one subject and he feel pride to have the knowledge of his own subject and teaching and denying any responsibility for any other subject. Here they say that the learner acquire scraps of information not actual knowledge.

2. Subject base curriculum ignores the interest and activities of the learner. The critics think that the arrangement of the course content is useless and inefficient and not suitable for teaching learning process. The subjects are logically organized.

3. **The critics also have a viewpoint that the fact is the students know about the history what a few men had done in the past but they do not know about the current situation in their own country and what are the hopes and**

desires of Pakistani people and what are the social problems they have today here .

The critics also said that subject base curriculum fails to develop habits of effective and critical thinking. This curriculum gives importance to mastery of conclusions of thought (the end result) rather than the process through which that conclusion were derived. Which support this conclusion that it lead to uncritical thinking? The traditional assumption is that anybody who has learned the facts and information can think effectively, but the evidence does not support this assumption.

Defense of Subject Curriculum

Defense of Subject Curriculum

The supporter of the subject base curriculum rejects the claim that it did not develop child's thinking. They argue that it is the most suitable method for the development of critical thinking in an individual but if one cant then the problem lies in the instruction not in the curriculum itself. A vast majority of countries select this method and they are producing botanist, doctors and geologist and so on.

2. The other claim that it is fragmentary and compartmentalized is also not true about subject base curriculum alone because no one can study one subject in one session at once in any kind of curriculum. They use the principle of selection in the selection of course contents. In a sense anything that is learnt is a fragment and is a part of some larger unit.

3. It gives the teacher the idea what to teach and the student what he suppose to learn and how much time they have to cover the course of the subject. This provides them with a constant source of security and a self evaluation process

through which they know how much course they have cover and how to complete.

4. Subject base curriculum use a logically sound framework for the organization of subject matter, it used the cause and effect principle in science and the chronological order of the historical events but they assumed an order and are reliable for learning experiences

5. The evaluation of subject base curriculum is easy. It use the achievement based testing in the evaluation to find the mastery of the subject matter in the individual.

6. It has a bright future. Subject approach is useful for specialization in any branch of knowledge. It is more effective.

LEARNER-CENTERED CURRICULUM

The supporters of learner-centered Curriculum give importance to individual development and they wants to organize the curriculum according to the needs and interest of learners, there are fundamental differences in this approach and the subject-centered design.

This movement from the traditional curriculum towards a programme that stresses the interests and needs of students, This approach was used by Rousseau in the education of Emile, then Dewy in his laboratory School in 1896-1904. it is believed that all of these twentieth-century efforts reflect, the influence of Dewey.

it is a fundamental principle of education that the beginning of each instruction it shall be connected with the previous experience of learners. The purpose is that the experience and the capacities that have been developed in early lessons, it should provide a starting point for further learning. The current importance given to student-centered programmes may not always acknowledge the Dewey's philosophy and influence on the movement to incorporate more student-serving learning opportunities into the curriculum.

The association for the Advancement of Progressive Education formed in 1919, had its aim “The development of the individual, based upon the scientific study of his mental, physical, spiritual, and social characteristics and needs”. The views of this association, later called the Progressive Education Association (PEA), were compatible with the ideas of Dewey’s as indicated by their principles:

1. Freedom to develop naturally.
2. Interest is the motive of all work.
3. The teacher is a guide, not a task-master.
4. Scientific study of pupil development.
5. Greater attention to all that affects the child’s physical development.
6. Co-operation between school and home to meet the needs of child-life.
7. The progressive school a leader in educational movement.

The aim of using the learner-centered curriculum on the part of curriculum planners to interpret the needs and interests design as one based on common needs and interests of learners rather than on those of the particular population to be served. Reflected in curriculum plans, this interpretation could and sometimes did, become the rationale for teaching. Research on learner centered curriculum in recent years made it possible for curriculum planners to develop a better learner-centered curriculum. Modern learning theories and dissatisfaction of students and parents from the old curriculum, are moving curriculum and instruction toward a design that focus on real student needs and interests.

Characteristics:

The curriculum design on the needs and interests of student has these characteristic and features.

- The curriculum plan is based on knowledge of learner's needs and interests in general and diagnosis the specific needs and interests of the population served by the plan.
- The curriculum plan is flexible, to accept new modification to conform to the needs and interests of particular learner's In fact, in some curriculum designs the learner may develop his or her own curriculum plan with the guidance of a teacher.
- The learner is consulted and tutored individually at difficult points in the curriculum and instructional process.
- Learner centered approach is an example of the applications of needs and interests (activities) approach. Subject obstacles were lowered or removed as teachers combined subjects to study social problems identified by students.
- Students in the experimental schools were more successful in college. This practice has ever lasting effect on secondary education.

Applications of learner Centered Curriculum:

If the learning opportunities are not based on the needs and interests of the learners then there is no assurance that the learners well equipped with the skills to participate effectively in social activities; students as adults and good citizens. Therefore we see that the needs and interests design as especially appropriate for the personal development, but not for the social competence domain.

The most common approach to meet the needs and interests of learners is the grouping of students for special programmes believed by the planners to match the needs and interests of the students concerned.

The major use of the needs and interests design in curriculum planning is in the provision of options for individual students. For example, the middle schools

provide many special interests activate, exploratory courses and other experiences aimed at giving each student opportunities to explore his own interest.

Currently the movement in higher education and expansion of it by “Open University” arrangements illustrates the feature of the needs and interests design. Drunker (1969) argues for continuing education which assumes “that the more experience in life and work people have, the more eager they will be to learn and the more capable they will be of learning.

Curriculum plans emphasizing the option concept:

1. The options are based on knowledge of learner characteristic.
2. Scheduling and other arrangements facilitate selection and choice of options, with counseling services available to help students.
3. Students are actively involved in planning and evaluating the options in general and for themselves in particular.

COMMUNITY CENTERED CURRICULUM:

The foundation of a community-centered learning environment is the fostering of explicit values or norms that promote lifelong learning. Community-centered learning environments also contribute to the aligning of students’ and instructors’ course expectations. On the first day of a course, it is likely that there are as many sets of expectations and assumptions about the course as there are people in the classroom. When instructors take the time to make course goals and expectations explicit, they are taking the first step in gaining their students’ cooperation. When instructors also take the time to elicit their students’ expectations and assumptions, they are starting down the road to a truly collaborative learning environment.

When students understand that their instructor is paying attention to their needs, both individual and collective, they are much more likely to become active

participants in the construction of a classroom community that helps all of its members to achieve their learning goals.

The Community-Centered 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 societal issues, and the goal of the curriculum is to explore and solve those issues. This is very much an activist model, where students are encouraged to be leading activists in their community where life problems, community affairs, and real-world problems exist. The foundation of the curriculum-centered curriculum is built on real-world problems, and the content is various social issues. In the Community-Centered Curriculum, students are agents of change seeking to make a difference in their community.

The main focus of this curriculum is the group and group action. This curriculum is a problem-solving curriculum, and the problems are to be solved through the participation and efforts of the whole group. Students work to find the social relevance of their efforts and how they can improve their citizenship by the projects they take on. The experiences that the students participate in the real world are alive, organic, real, and life changing. Students are consistently working to make the world a better place.

“Young people are at a formative, idealistic stage of their life, and they need to learn that they can and should make a difference in the world” -Ellis

In this curriculum teachers have a very important role. They serve as facilitator: organizing group efforts, showing students that they are in this together, that they need each other, and that they have to have a group to do this. Some often question why this role is so important. We need to realize that children are not born with all

the necessary social skills to work together as a group. Therefore, the teacher helps children develop their social skills and create a climate for collaboration and team building. These skills and this environment are essential for success within the curriculum. The teacher is responsible for turning their class into a problem-solving unit. They help their unit solve their community based problems by planning and coordinating trips into the community. They are also responsible for making connections with community members who will further help the students with their projects. Since teamwork is such a large part of this curriculum, teachers often work with teachers throughout the school in order to help students achieve their goals.

The students' role in this curriculum is perhaps the most important. They do not sit at their desk with textbooks doing never ending class work. Students are responsible for being aware of the world around them and the issues that impact their life. It is from these life issues and problems that community centered curriculum is developed. Students' goal is to leave the world a better place than they found it through group efforts. The *esprit de corps* (the common spirit) is a focal point of the curriculum and developed as the students work together in group projects. Students are to engage in the culture and become involved in the community that lies beyond their school and to make a difference in that community. Participation is the true key of this curriculum, and students must work together if they wish to succeed.

Students start their learning process with a driving question. They then take this question and explore it through inquiry using applied knowledge. Students then engage with their peers, teachers, and community members in collaborative activities. The students' project learning can be scaffolded by various supports

including technology. Finally, students create tangible projects that will address their driving question.

The community centered curriculum requires a classroom like any other school. Students come together to discuss community issues and decide where their course of study should go. Students must work together to solve particular issues, and sometimes that requires other grade levels. Participate in this curriculum are like a democracy. Students make many of the key decisions.

This curriculum focuses on the real world, the real world is this is learning laboratory. Students spend much of their time outside of the classroom and school, and in the community investigating. This curriculum has integrated studies where students and teachers work backwards from the problem, trying to find out how they can be of help.

B) ROLE OF TEACHER IN CURRICULUM DEVELOPMENT

Curriculum plays an important role in the field of teacher education. Curriculum is the planned interaction of pupils with instructional content, materials, resources, and processes for evaluating the attainment of educational objectives. Curriculum is used in several meanings. There are also a number of definitions of the term, curriculum. The word curriculum is derived from the Latin word 'currere' which means 'run' and it signifies a 'run-away' or a course which one runs to reach a goal.

Carl defines curriculum development as "... an umbrella and continuous process in which structure and systematic planning methods figure strongly from design to evaluation." For the purposes of this study, this definition is accepted as it includes all aspects from design, dissemination, and implementation to evaluation.

According to Taylor, Curriculum means all the learning which is planned or guided by the school, whether it is carried in groups or individually, inside or outside the school.

According to Kerr , "Curriculum means all the learning which is planned or guided by the school, whether it is carried on in groups or individually, inside or outside the school

Teachers play central role: Without doubt, the most important person in the curriculum implementation process is the teacher. With their knowledge, experiences and competencies, teachers are central to any curriculum development effort.

More Knowledgeable: Better teachers support better learning because they are most knowledgeable about the practice of teaching and are responsible for introducing the curriculum in the classroom.

Make Efforts in curriculum: If another party has already developed the curriculum, the teachers have to make an effort to know and understand it. So, teachers should be involved in curriculum development. For example, teacher's opinions and ideas should be incorporated into the curriculum for development.

Works as Implementers: On the other hand, the curriculum development team has to consider the teacher as part of the environment that affects curriculum. Hence, teacher involvement is important for successful and meaningful curriculum development. Teachers being the implementers are part of the last stage of the curriculum development process.

Understand psychology of the learner: Teachers know the needs of all stakeholders of teacher education. Teachers can understand the psychology of the learner. Teachers are aware about the teaching methods and teaching strategies.

Assess the learning outcomes: Teachers also play the role as evaluator for the assessment of learning outcomes. So teachers must possess some qualities such as planner, designer, manager, evaluator, researcher, decision maker and administrator.

Teachers play the respective role for the each step of curriculum development process. Curriculum planning involves analysis of philosophy, social forces, needs, goals and Objectives, treatment of knowledge, human development, learning process & instruction, and decision.

Curriculum preparation involves systematic data, content, selection, collection, assessment, organization.

Design factors includes school (levels, types, Structures), educational technology, systemic vocational, social reconstruction, Curriculum design, analysis of social needs, translating the needs into Course/general/learning/terminal objectives, splitting the objectives into specific objectives, grouping the specific objectives into subjects, deriving the subjects from the above classification, specifying enabling objectives, unitizing each subject matter, specification of required time, and syllabus formulation.

Curriculum development phases consist of Instructional development, Materials & media development, Methods of teaching & testing.

Implementation of the Curriculum involves Instructional scheme of each subject to be completed in the semester, Planning the lessons as per the timetable, Using the transactional strategies, Using the appropriate media, Providing the learning resources, Promoting classroom learning experiences, Progressive testing

Curriculum evaluation involves, Intra-curricular evaluation, Teacher evaluation of students, Student evaluation of teachers, Materials evaluation, Verification of methods, Evaluation of tests and examinations, Checking the learning outcomes while on the field, Curriculum review/ improvement/ change/ modification, System revision. After evaluating the prepared curriculum it is observed that the curriculum is not satisfactory then developer turns for revising and improving phase.

c) CURRICULUM VISUALIZED AT DIFFERENT LEVELS-NATIONAL, STATE, LOCAL LEVEL

INTRODUCTION

A curriculum is an educational programme of experiences offered to the learner under the guidance of the School in order to effect certain changes in his behaviours”. An educational planning for a success. Curriculum planers need to establish very clearly what they hope to achieve with the learners, then decide on how they hope to achieve with the learners, then decide on how they intend to do this and finally consider how successful they have been in their efforts.

Some curriculum experts to mean the same thing have used the terms curriculum planning and curriculum development. Any difference that may exist between the two terms should be in significant.

Curriculum Planning: Curriculum planning can be seen as the decision making process in which the focus is on the determination of the nature, organization and orientation of the curriculum design. It is considered as being choice oriented and can be viewed as the process of arriving at decisions that will lead to the building of a programme of learning experience that will enable learners in a School system attain pre-specified goals and objectives (Ugbamadu 1992). Decisions have to be taken about the aims and objectives that the school system

should endeavour to achieve; the content and learning experiences and how to evaluate the students level of attainment of the aims and objectives.

Curriculum Development; curriculum development refers to the actual implementation of the results of the decisions reached during curriculum planning. This means that when decision have been made in respect of the nature, organization and orientation of the curriculum, it becomes the place of curriculum development to proceed to build the curriculum based on the decisions. One can see from this that curriculum planning precedes curriculum development, but both are essentially inseparable. According to Nicholls and Nicholls (1978) the planning of learning opportunities intended to bring about certain changes in pupils and the assessment of the extent to which these changes have taken place in what is meant by curriculum development. Curriculum planning and development has been visualized as a continuous and dynamic process.

CURRICULUM DEVELOPMENT STRATEGIES FOR DIFFERENT LEVELS OF EDUCATION

The different levels of education in our educational system in Nigeria include pre-primary, primary, secondary and tertiary levels, each with its own peculiarities especially in respect of planners within the levels. While the strategies for curriculum planning and development may be the same, some factors are given adequate consideration for a given level. For each level, different agencies and individuals usually carry out planning and development curriculum.

Considering the pre-primary level, any curriculum planning and development endeavours must consider the purpose of pre-primary education as contained in the National Policy on Education (1998). Section 2:13, stimulates that the purpose of pre-primary education should be to:

- a) Effect a smooth transition from the home to the school.

- b) Prepare the child for the primary level of education.
- c) Provide adequate care and supervision for the children while their parents are at work (on the farms, in the markets, officials, etc).
- d) Inculcate social norms
- e) Inculcate in the child the spirit of inquiry and creativity through the exploration of nature, the environment, art music and playing with toys etc.
- f) Develop a sense of co-operation and team spirit
- g) Learn good habits, especially good health habits and
- h) Teach the rudiments of numbers, letters, colours, shapes, forms etc through play.

The objectives for the pre-primary level of education as outlined clearly point to the type of curriculum the pre-primary school child should be exposed to since one of the main objectives of the pre-primary school child should be exposed to since one of the main objectives of the pre-primary level is “preparing the child for the primary school level” it follows that the pre-primary school curriculum should essentially not be more detailed than the component of the primary school curriculum.

In preparing the pre-primary level of education curriculum, adequate consideration should be given to the relevant theories of pre-primary school learning/pre-primary school learning style and the intellectual development of the child at this level.

Theories that have been put forward to hold the key to effective facilitation of learning among pre-primary school children are offshoots of Stimulus Response (S-R) theory of learning. The sub-theory include:

- i. Sub-theory of learning by doing
- ii. Sub-theory of curiosity and interest
- iii. Sub-theory of inquiry

iv. Sub-theory of learning through stories.

These four sub-theories fall within the Stimulus-Response Theory of learning.

Under the cognitive theory of learning we have;

1. The sub-theory of metamorphic change and environment.
2. Sub-theory of movement
3. Sub-theory of learning through perception

With regard to the intellectual development stage of the pre-primary school child, it is known from Piaget's Theory of intellectual development that the pre-primary school child falls within the pre-operational period (2-7 years). The pre-operational period is divided into two sub-periods:

- (i) The perceptual period (2-4years) and
- (ii) The intuitive period (4-7years)

The primary school child falls within this development stage. The national policy on education (1998) section 2:11 referred to pre-primary education as education given in an educational institution to children aged 3 to 5 plus prior to their entering the primary school.

At this stage of development, the child at the early part is egocentric and has no real conception of abstract principles necessary for classification, display inability to conserve number in the presence of irrelevant information; the child is also unable to deal with problems of ordering.

After a review of the objectives of the pre-primary level of education, the relevant theories of the pre-primary school learning, the learning styles of the pre-primary school child and the intellectual development stage of the pre-primary

school child, the stage is now set for any curriculum planning and development activity for this level.

The curriculum of the pre-primary level of education must essentially be based on the national objectives of this level of education. It should be such that would make for a high degree of achievement of the objectives by the children. It must be emphasized that the curriculum at this beginning stage of a child's formal education is crucial for future learning.

The curriculum should as a necessity reflect the social norms of the immediate community in particular and the nation in general. The experiences and activities for the pre-primary school level should be formulated around the theories of pre-primary school learning, learning styles of pre-primary school children and with due consideration given to the intellectual development stage of the pre-primary school and teachers should be guided in the implementation of the curriculum by these factors.

Considering the theories of pre-primary school learning, the sub-theory of learning by doing will demand that children will be given every opportunity to do things themselves. Hence teachers should endeavour to reinforce them by rewards and praises whenever they do things well. Enough play grounds, toys etc should be provided to allow the children to do things.

Creation and use of relevant and educative stories, different types of apparatus for various activities, diagrams and pictures should be necessary part of the curriculum as they create in the preschool learning environment curiosity and interest. The teacher should make the implementation of the curriculum interesting for the children. Once interest is constantly generated; the children will have love for school, learn well and see the school as their second home.

After due consideration of the forementioned factors we come to the conclusion that:

1. Children of pre-primary school age learn by doing things. They should be exposed to opportunities for doing things themselves.
2. They are curious and stimulating environment would help them to interact more effectively. They should be encouraged to ask questions and to answer questions.
3. They learn through stories hence their curriculum should contain short interesting, educative stories, short poems, rhymes and songs.
4. They learn through perception and should be taught to perceive things.
5. They have short attention span hence they should be provided with pictures, diagrams and real objects to sustain their interest. In a nutshell the pre-primary school curriculum should consist of various activities such as modeling, colouring, games, singing, dances, short stories, manipulation of actual objects and relevant activities. The teacher must not be rigid in his approach rather he should encourage the growth of curiosity, inquisitiveness, innovativeness, inventiveness and initiative in the children.

PRIMARY, SECONDARY AND TERTIARY LEVELS

In planning and developing relevant curriculum for these levels the following characteristics of the learner must be considered, they include the level of maturity of the learners, the period of schooling and other psychological and social factors must be considered.

The nation's educational objectives for the levels should be dully analysed and appropriate content and learning experiences selected and organized to achieve the objectives. Also the mode of evaluation of students achievement and of the curriculum should be determined.

Planning and developing curriculum at these levels is carried out by different bodies;

- § For the Primary School the Federal and/or state Ministries of Education plan and develop the curriculum.

§ For the secondary school, the ministries of education in conjunction with appropriate examination bodies formulate the curriculum.

§ For the Tertiary Institutions, the individual institutions previously formulated their curriculum. The current situation in Nigeria is that the National Commission for Colleges of Education (NCCE) formulate curriculum for all the Colleges of Education in the country. For the Polytechnics and related Institutions the National Board for Technical Education (NBTE) formulates the curriculum being used while the education component of the polytechnic is presently as prescribed by the NCCE. The curriculum for the Universities is formulated by the National Universities Commission (NUC).

LEVELS OF CURRICULUM PLANNING AND DEVELOPMENT

There are different levels of curriculum planning and development but five levels can be easily identified within the education system. The levels include:

- 1 National level
- 2 State level
- 3 Local level

At each level of planning; certain agencies or bodies are involved and they produce particular curriculum products. At the national level, the Federal Government usually, through its Ministry of Education and its agencies like the Nigerian Educational Research and Development Council (NERDC), West African Examinations Council (WAEC), National Teachers Institute (NTI), National Commission for College of Education (NCCE), National University Commission (NUC) and National Board for Technical Education (NBTE) produce required national guidelines and policy statements, minimum standards curriculum guides, requirements for certification and syllabus for external examinations. Whatever comes out of the classroom level is translated from the state level down to the curriculum through different teaching-learning processes.

At the state levels, the various Ministries of Education, Schools Boards Curriculum development centers and professional bodies translate federal guidelines into specific subject area syllabi, possibly produce text materials, supply teaches and resources materials.

At the Local Government Area level, various ministries of education/schools Boards, harmonise subject area syllabi for adoption in schools. Textbooks are distributed at this level; in addition seminars and workshops are planned and executed.

At the school level, the principals and headmasters, head of various subject departments and some support staff develop scheme of work, some curriculum materials and schedules for teaching and learning.

At the classroom level, the teachers who are the key agents in curriculum implementation, and other required resources persons within the environment, develop unit plans, lesson plans, lesson notes and evaluation instruments.

UNIT-III

a) DISCIPLINE:MEANING, TYPES AND IMPORTANCE

According to the dictionary, discipline is a pattern, training that is expected to produce a specific character or of behavior, especially training that produces moral or mental improvement, Controlled behavior resulting from disciplinary training, systematic method to obtain obedience. A state of order based upon submission to rules and authority, to train by instruction and control.

Discipline is a learned behavior. It is much more than blind obedience and punishment. Rather, it is a state of order and obedience that is a result of regulations and orders. You must be disciplined to achieve your goals. Discipline

is training that develops molds, strengthens, or perfects mental faculties and character. It involves placing group goals above your own, being willing to accept orders from higher authority, and carrying out those orders effectively. Part of the job of a cadet is to make their fellow cadets aware of the purpose and meaning of discipline.

Types of Discipline.

Self Discipline: Self discipline is a willing and instinctive sense of responsibility that leads you to know what needs to be done. Getting to work on time, knowing the job, setting priorities, and denying personal preferences for more important ones all measure how self disciplined you are. This is the highest order of all disciplines because it springs from the values you use to regulate and control your actions. The ideal situation is to motivate cadets to willingly discipline themselves, and exercise self control and direction to accomplish the task.

Task Discipline: Task discipline is a measure of how well you meet the challenges of your job. Task discipline requires that you have a strong sense of responsibility to do your job to the best of your ability.

Group Discipline: Group discipline means teamwork. Since most jobs in CAP require that several people work effectively as a team, group discipline is very important.

Imposed Discipline: Imposed discipline is the enforced obedience to legal orders and regulations. It is absolute in emergencies when there is no time to explain or discuss an order an order. Much of your CAP training is to teach you to carry out orders quickly and efficiently. This type of discipline provides the structure and

good order necessary throughout your unit to accomplish a task no matter the situation.

Importance of Discipline:

Being disciplined is a way to gain many advantages and benefits in life. Discipline helps one to be

1. Being focused: Being disciplined helps one stay focused towards his work, activities or goals. A person with strong goals is more focused and keeps up to work in time in everyday life. Vice-verse any one with discipline has to keep his mind focused on his work or goals avoiding mental disturbances. If not he cannot complete his work in time and also be undisciplined.

2. Respected by others: Discipline helps command respect from others. Many struggle to gain respect from others in the workplace. But the easiest way to get respect is to be disciplined. People around and also the sub-ordinates respect a person who is disciplined. The reasons are

Firstly it is tough to be disciplined for any one. And if you are one, then you have respect from others for that ability.

If you are an employee, due to discipline you tend to complete work in time, be in work place at time etc. This helps you win respect from your boss or employer.

In studies being disciplined helps you complete you exam preparation, homework in time and helps you gain highest score. This wins you respect from your colleagues.

If you are a boss or leader of group etc. being disciplined helps you command respect from your sub-ordinates. In turn they tend to be disciplined and helps to complete your goals and reach higher levels.

There are chances that seeing yourself discipline others might consider you as a role model.

3. Stay healthy: Disciplined life includes regular habits like taking food, medicine (if any), having bath, exercise, [walking](#) and sleeping at right time. Exercise and other regular habits will tune the body and mind so well that always the person remains healthy. Even in case of chronic disease taking medicines at regular time helps get well soon. Having food in time is very important because even food is also a medicine. Read the importance of food for life.

4. Stay active: Discipline is a way of positive outlook to life. There is an enthusiasm and self confidence from within. So it keeps one active and not lazy instead. Notice any one who is disciplined, he/ she is always active in comparison to others. Also due to disciplined habits like having food, sleep and exercise regularly, they stay active whole of the day.

5. Self control: A person with self discipline has more self control over himself. He is careful in his use of words while talking, his behavior etc. avoiding himself from being entangled in silly problems. This way he also build [good relations](#) with people.

6. Better Education: Discipline in education is very important for better education. Education is incomplete without learning discipline. Classroom discipline helps students to listen to teachings well and also cover the entire syllabus. While coming to school in time helps them awake early, attend nature calls, have bath and breakfast in time. Hence discipline in schools helps students to stay healthy which is good for growth of both body and mind.

7. Get things done & be happy: Being disciplined helps get things done faster and in right time. Though some things happen late due to other factors, still one with

discipline gets them done faster than others due to his self discipline like being on time. So this leads to [peace of mind](#) and keeps one happier.

Consider yourself in a situation when one of your family member asked you to go out at an evening. If you are disciplined, you complete your work in time and try to give your time for them. If not they get hurt by you and this leads to loss of happiness. This is a common or routine issue in many families. So try to stay disciplined. It helps you to keep your family and friends happy as you can give them extra time.

8. Have more time in a day: A disciplined person have more time in a day than an undisciplined person. So more time means there is more chance to do extra works or other pending works. We can overcome procrastination and laziness in work.

9. Stay stress or tension free: One has tension during [competitive exams](#) or daily routine work. This is an internal anxiety or unknown fear about the outcome of the work. Staying disciplined helps one study well in advance and not just before exams so he remains tension free. If it is a work place, due to discipline the work is planned well and executed in time so there is no stress. So discipline helps one stay stress free rise your self esteem and also get out of possible depression.

Conclusion:

Discipline is required for any activity where people work together toward a common objective. The opposite of discipline is anarchy, where each person does what he wants without concern for others. Any organization, from a civilized state to a football team to a brownie troop depends on group cooperation, and cooperation cannot be achieved without discipline. Discipline is the structure and order within an individual or within a group that allows for true cooperation, real support of the mission and the members of the team or organization.

b) Core Idea of Developing Disciplines: Meaning and Organization

School discipline is the system of rules, punishments and behavioral strategies appropriate to the regulation of **children** and the maintenance of order in **schools**. Its aim is to create a safe and conducive learning environment in the classroom.

School discipline has two main goals: (1) ensure the safety of staff and students, and (2) create an environment conducive to learning. Serious student misconduct involving violent or criminal behavior defeats these goals and often makes headlines in the process. However, the commonest discipline problems involve noncriminal student behavior (Moles 1989).

It is important to keep the ultimate goal in mind while working to improve school discipline. As education researcher Daniel Duke (1989) points out, “the goal of good behavior is necessary, but not sufficient to ensure academic growth.” Effective school discipline strategies seek to encourage responsible behavior and to provide all students with a satisfying school experience as well as to discourage misconduct.

The word “discipline” is derived from the Latin root “disciples” meaning a pupil or disciple. Naturally, the problem of discipline was taken to consist in bringing the conduct of the pupils into conformity with ideas and standards of the master. The pupil had to develop the virtue of docility and plasticity so that the teacher might impress his personality on them and mould them in his own image. This was the conception of the relationship between pupil and teacher everywhere. Its modern concept is very broad and inclusive one. It does not recognize difference between mental and moral behavior for the purpose of control, nor, in fact for any other purpose.

In fact, the individual mind is conceived of “as a function of social life-as not capable of operating by itself but as requiring continual stimulus from social agencies and finding its nutrition in social purpose”.

Modern view of discipline is to bring the same unity in the educative process and educative material as we find in real life. School must be a social organism in which social situations should be provided to stimulate and direct the impulses of the pupils in the pursuit of the common purposes through cooperative or shared activity. To obtain good result is also another view.

Cooperation should improve the intellectual, moral, social and physical activities of the students in school environment and these must be directed towards the realization of the certain goals.

Purpose of the discipline is also develop the attitudes, habits, ideas, and code of conduct through the medium of the social life of the school which should be organized on a cooperative basis and inspired by higher ethical teaching of religion.

The purpose of discipline is to help the individual to acquire knowledge, habits, interests and ideals which conduce to the well being of himself, his fellows and society as a whole. It gives realization to the school that it must be reconstructed on the lines of the development and conscious pursuit of common ends in a cooperative spirit, each member contributing to the common good in accordance with special gifts. Life in the school thus organized becomes similito the, and continuous with, life in democratic society, and discipline becomes co-extensive with the whole of school life.

Main points

Discipline gives children a feeling of security by telling them what they may and may not do.

It helps children to avoid from frequent feelings of guilt and shame for misbehavior-feelings that inevitably lead to unhappiness and poor adjustment.

Discipline enables children to live according to standards approved by the social group and thus to win social approval.

Through discipline, children learn to behave in a way that leads to praise that, they interprets indications of love and acceptance which is essential to successful adjustment and happiness.

Discipline serves as an ego-bolstering motivation, which encourages children to accomplish what is required of them.

Discipline helps children to develop a conscious the “internalized voice” that guides them in making their own decisions and controlling their own behavior.

UNIT-IV: ANALYZING RELATIONSHIP BETWEEN SCHOOL SUBJECTS

a) Nature Importance and historical perspective of science, social science, mathematics, and languages

In recent years STEM (science, technology, engineering, and maths) 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 be addressed and more support provided to the social sciences.

While for many people the words “social sciences” may conjure up 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.

Among the important roles that social science can play is in fighting the spread of infectious diseases. A perfect example is the recent Ebola crisis in West Africa. While part of solving this problem naturally rested on developing a clearer understanding of the pathogens involved and increasing investment in drugs, there were a number of social science needs as well. In particular, it was necessary to understand the people who were suffering from the disease as well as the wider society in which they were living. For example, doctors needed to understand how people's attitudes were shaped towards such things as hand washing and other sanitary behaviours. It was also necessary to inquire into larger societal questions such as why do states fail, and how can they be rebuilt and strengthened. Additionally, the fight against Ebola needed specialists in administration, markets, drug pricing, human resources, fund raising, and leadership.

In other fields of medicine, social scientists again have much to offer and are working with a variety of organizations in the UK. For example, researchers are currently studying how cancer patients and their carers understand the recent, and on-going, changes in cancer science. Social scientists are also working with the National Institute of Health to provide a clearer picture of patients' experience with community hospitals. Sociologists are working with the Medical Research Council on the possible causes of poor sleep patterns.

Other examples of the uses of social science abound. The United Kingdom's Ministry of Defence uses social scientists at thinktanks and universities in order to better understand the world and be better able to handle the defence and security challenges it faces every day. In another interesting example, the UK's Home Office has brought together engineers, criminologists, and auto manufacturers in order to figure out how to build cars that are more difficult to steal. The insight that criminologists can provide into the reasons why people steal, as well as their methods, is of particular importance to this project.

Social scientists are also in great demand in the business world. For example, easyJet sponsors the Consumer Data Research Centre, which uses geo-demographic mapping to provide information to the airline about its customers' use of services, travel patterns, access to airports, and much more. Companies around the world are often desperate to gain the type of deeper understanding of their customers that social scientists are able to provide. Social scientists have the skills to see the world as others do, as well as find data that others may have missed.

Strengthening social sciences for the future

It is clear that social science is of immense importance to societies around the world, however there still is much work to be done to increase the level of support that they receive. One of the key programs that have emerged to champion the social sciences has been the Campaign for Social Science. The Campaign attempts to inform public policy, build coalitions, and engage in measured advocacy for support of the social sciences.

Another important program that has helped raise the profile of the social sciences is The Future of the UK and Scotland, which, according to its website, “works to illustrate not just the value but the diversity of the social sciences – including resources on immigration policy, higher education, welfare, defence and security, business, currency and the constitution”. Successful programs like the ones listed above have done much to increase general knowledge of, and to secure increased funding for, the social sciences.

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.

MATHEMATICS

The area of study known as the **history of mathematics** is primarily an investigation into the origin of discoveries in [mathematics](#) and, to a lesser extent,

an investigation into the mathematical methods and notation of the past. Before the modern age and the worldwide spread of knowledge, written examples of new mathematical developments have come to light only in a few locales. From 3000 BC the Mesopotamian states of Sumer, Akkad and Assyria, together with Ancient Egypt and Ebla began using arithmetic, algebra and geometry for purposes of taxation, commerce, trade and also in the field of astronomy and to formulate calendars and record time.

The most ancient mathematical texts available are from Mesopotamia and Egypt - *Plimpton 322* (Babylonian c. 1900 BC), the *Rhind Mathematical Papyrus* (Egyptian c. 2000–1800 BC) and the *Moscow Mathematical Papyrus* (Egyptian c. 1890 BC). All of these texts mention the so-called Pythagorean triples and so, by inference, the Pythagorean theorem, seems to be the most ancient and widespread mathematical development after basic arithmetic and geometry.

The study of mathematics as a "demonstrative discipline" begins in the 6th century BC with the Pythagoreans, who coined the term "mathematics" from the ancient Greek *μάθημα* (*mathema*), meaning "subject of instruction". Greek mathematics greatly refined the methods (especially through the introduction of deductive reasoning and mathematical rigor in proofs) and expanded the subject matter of mathematics. Although they made virtually no contributions to theoretical mathematics, the ancient Romans used applied mathematics in surveying, structural engineering, mechanical engineering, bookkeeping, creation of lunar and solar calendars, and even arts and crafts. Chinese mathematics made early contributions, including a place value system and the first use of negative numbers.^{[6][7]} The Hindu–Arabic numeral system and the rules for the use of its operations, in use throughout the world today

evolved over the course of the first millennium AD in [India](#) and were transmitted to the [Western world](#) via [Islamic mathematics](#) through the work of [Muhammad ibn Mūsā al-Khwārizmī](#). Islamic mathematics, in turn, developed and expanded the mathematics known to these civilizations. Contemporaneous with but independent of these traditions were the mathematics developed by the [Maya civilization](#) of [Mexico](#) and [Central America](#), where the concept of [zero](#) was given a standard symbol in [Maya numerals](#).

Many Greek and Arabic texts on mathematics were [translated into Latin](#) from the 12th century onward, leading to further development of mathematics in [Medieval Europe](#). From ancient times through the [Middle Ages](#), periods of mathematical discovery were often followed by centuries of stagnation. Beginning in [Renaissance Italy](#) in the 15th century, new mathematical developments, interacting with new scientific discoveries, were made at an [increasing pace](#) that continues through the present day. This includes the groundbreaking work of both [Isaac Newton](#) and [Gottfried Wilhelm Leibniz](#) in the development of infinitesimal [calculus](#) during the course of the 17th century. At the end of the 19th century the [International Congress of Mathematicians](#) was founded and continues to spearhead advances in the field.

b) Correlation among different school subjects(science, social science, Mathematics, Languages) and its effect on curriculum framework

School Subjects-Meaning

A school subject is an area of learning within the school curriculum that constitutes an institutionally defined field of knowledge and practice for teaching and learning.

School subjects can be traditional academic subjects, such as mathematics, history, geography, physics, chemistry and economics.

Newly there are some unconventional school subjects like tourism and hospitality. Academic school subjects, such as mathematics, chemistry, geography, history, and economics, are to be compulsorily taught to the students.

The content of these academic subjects need to be worked with and transformed by the teachers in such a way that it is appropriate for classroom teaching.

Constructing a school subject involves the selection and arrangement of content of Knowledge, skills and the transformation of that content for school and classroom use.

Constructing a school subject is in accordance with respect to both the societal expectations and the activities of teaching. Thus, a school subject is the result of institutional selection, organization, and framing content for social, economic, cultural, curricular and pedagogic purposes.

A school subject constitutes an organizing framework that gives meaning and shape to curriculum content, teaching, and learning activities.

School subjects are distinctive, purpose-built enterprises, constructed in response to different social, cultural, and political demands and challenges, and towards educational aims. Thus a school subject contains content, and translating content for educational purposes.

Academic disciplines-Meaning

The term 'discipline' originates from the Latin words *discipulus*, which means pupil, and *disciplina*, which means teaching (noun).

Academic discipline is a field or branch of learning affiliated with an academic department of university, formulated for the advancement of research and scholarship. Academic discipline is formulated for the professional training of researchers, academics and specialists.

An academic discipline or 'field of study' is a branch of knowledge that is taught and researched as part of higher education.

Examples for Academic Disciplines are Anthropology, Space Science, psychology, sociology, archeology, Education etc.

Relation of discipline with History

Discipline and history is integrated subject of each other, which are based on human experiences and knowledge. While teaching history, the teacher connects it with historical events. History is concerned with past events. What happened till today that is history? Thus, it can be termed as the revision of happened events and facts. It makes full impact on life of being. The complete information / knowledge of history may be a source of motivation for the learners. While half/ incomplete knowledge of the subject may be harmful for teacher as well as learner. It can be totally explained if the discipline is in classroom.

Dr Deepak Sharma:

“History is mirror of our direct experiences, which is implemented in present society with help of self-discipline. It connects students with real experiences.”

Zitler:

“History is main subject, all the subjects move around it.”

It means history plays an important role in life of individual. What we did, doing or to be done in future, these are responses of our past activities and experiences. Our life revolves around this subject. We learn a lot from it and help the other people to learn from it.

Relation of discipline with Geography

Geography is taught by connecting with discipline till all levels. It is also considered the essential part of the subject physics. It is related with natural science and social science. Thus, it attracts scientist towards itself. It studies about the life style or standard of living, cultural activities and social environment of people of a particular society.

The world has been divided into many parts on the basis of circumstances. Every country of the world has unique climate, living standard, dresses, eating material, language, customs, beliefs.

Nature plays very important role in the protection of a country. On the basis of inter-related relationship of two subjects, it can be said that:

1. Discipline and geography are supplement to each other. Both of them cast their impact of being and his life in social context. The geography studies about the earth and its changes in climate factor, in the same way the discipline observes the being living on this earth and his activities.

2. History is witness that various geographical circumstances affect the social being in various ways. Man and nature are deeply related with each other. Man always used to be the against nature. Discipline always makes its impact on internal and external part of human life.

3. Man has use nature timing in different ways. What human being has given to nature, that is not useful, that is useful which he has taken from nature.

4. Geographical circumstances have provided a number of minerals and resources to man. By the use of these resources he is attempting to make his life more effective and comfortable.

Relation of discipline with Civics

Civics is considered the indispensable part of discipline at different levels. Civics evaluates the duties and rights of man in a political manner. It helps to emerge security, equality, justice, love, freedom, brotherhood and international understanding in individual. it is not possible to follow these rights and duties without discipline in life.

1. Discipline help the students to become able and ideal citizen in future. And civics helps it in a practical manner. Both are supplement to each other. Discipline

observes and evaluate about various aspects of human being. While civics is related with political manner of society.

2. In civic part of the subject the governing authority and its working system is studied there, while the discipline tells almost about all regions of the life of man as far as possible way.

3. Civics is helpful to study the working system at state level also. It is concerned with central as well as state level governing authority. Discipline removes the problems of the man in internal and external ways.

Relation of Discipline with Economics

Economics is considered as separated subject from discipline. It was introduced by Adam Smith in 1776. It helps man to fulfill his daily needs, requirement of the life activity. It helps to remove the problems related with economic system of man. It helps to maintain the budget of the house also.

An educated householder can make the family happy if she observes the strategy of saving and spending according time and situation. On the other hand discipline provides direction to use this economic aspect in the life. If we have no discipline we cannot grow ourselves in market or in home at economic field. It is said as we have sources we should spend. We get information of the economy system of the nation / society/home if we have discipline.

Relation of Discipline in Mathematics

Discipline and maths directly give/cast their direct impression on life of the social animal, because the later teaches him to adjust in the society and the other one helps him to control over his economic activities and do various work of the routine life.

1. With the help of maths one can establish healthy relationship with other being/faculties of the society. It helps to make his surroundings.

2. The knowledge of maths is the mother-board of economic life. It gives experiences to one. One can think about the different resources to utilize and provide remedial measures over these problems.
3. For fulfilling the requirement of daily needs, one has to do some work. One can apply for a good job. If he has the knowledge of maths terms. The job become easily available on the basis of knowledge of mathematical terms.
4. Maths helps to provide direction to disciplined person. The availability of resources always attracts man towards itself. An individual attain more and more money. But get money one can have knowledge to get more money to solve maths problems.
5. Discipline is essential for every individual to clear the problems of mathematical problems.

Relation of Discipline with Science

1. Science gives knowledge to human being about new discoveries and new technology.
2. The use of natural resources is possible with help of science.
3. Science provides opportunity to human being to move on other planets. He kept his feet on earth only due to help of science
4. Man depends on science for his comforts in life.
5. Science preserves her from various natural disasters.
6. Man utilizes resources for running his domestic business. He demands various technological instruments for fulfilling his requirements.

Thus, discipline and science are co-related subjects to each other. Science works as helping tool to provide completeness to social life of individual.

Relation of Discipline with Language

Discipline and language are co-related to each other. What subject observes about the social being, the language does the same kind of work in this way. Language is

the source to provide all examples, events, facts of the society. The information about the historical events can be obtained through the medium of language. Even the study about the discipline can be possible through the proper medium of language.

1. Language is the pre-requisite for all kinds of knowledge. Through it collection and study is done of all kinds of content matter.
2. It is the component to provide knowledge with help of cumulative records of facts and events.
3. The students can be prepared for learning in discipline if they have proper knowledge of the language.
4. Language is the best medium of communication. Without it the knowledge cannot be obtained in systematic way.

Relation of Discipline with Art and Music

Art, music and other such kind of creative activities are considered the essential parts of human life. These all activities are developed only with help of discipline

1. Art is an ornament of life of being. Discipline help to remove the problems of human life while art, literature and social skill give new direction to his life.
2. Discipline and art give emphasis on development of human being.
3. Art gives new direction to the subject discipline and helps to make it more strengthened.
4. Art and literature facilitate to various aids in the teaching of social sciences/ studies.
5. In discipline the learner gets knowledge to maintain our traditional or cultural heritage.

Thus, it can be said that without discipline art is meaningless because it is the basic need of the dynamic nature of the subject. Both of them provide strength to each other for development.

c) Changes in school subjects in terms of social, political and intellectual context

The term metaphysics literally means “beyond the physical.” This area of philosophy focuses on the nature of reality. Metaphysics attempts to find unity across the domains of experience and thought. At the metaphysical level, there are four* broad philosophical schools of thought that apply to education today. They are idealism, realism, pragmatism (sometimes called experientialism), and existentialism. Each will be explained shortly. These four general frameworks provide the root or base from which the various educational philosophies are derived.

** A fifth metaphysical school of thought, called Scholasticism, is largely applied in Roman Catholic schools in the educational philosophy called “Thomism.” It combines idealist and realist philosophies in a framework that harmonized the ideas of Aristotle, the realist, with idealist notions of truth. Thomas Aquinas, 1255-1273, was the theologian who wrote “Summa Theological,” formalizing church doctrine.*

The Scholasticism movement encouraged the logical and philosophical study of the beliefs of the church, legitimizing scientific inquiry within a religious framework.

Two of these general or world philosophies, idealism and realism, are derived from the ancient Greek philosophers, Plato and Aristotle. Two are more contemporary, pragmatism and existentialism. However, educators who share one of these distinct sets of beliefs about the nature of reality presently apply each of these world philosophies in successful classrooms. Let us explore each of these metaphysical schools of thought.

Idealism

Idealism is a philosophical approach that has as its central tenet that ideas are the only true reality, the only thing worth knowing. In a search for truth, beauty, and

justice that is enduring and everlasting; the focus is on conscious reasoning in the mind. Plato, father of Idealism, espoused this view about 400 years BC, in his famous book, *The Republic*. Plato believed that there are two worlds. The first is the spiritual or mental world, which is eternal, permanent, orderly, regular, and universal. There is also the world of appearance, the world experienced through sight, touch, smell, taste, and sound that is changing imperfect, and disorderly. This division is often referred to as the duality of mind and body. Reacting against what he perceived as too much of a focus on the immediacy of the physical and sensory world, Plato described a utopian society in which “education to body and soul all the beauty and perfection of which they are capable” as an ideal.

In his allegory of the cave, the shadows of the sensory world must be overcome with the light of reason or universal truth. To understand truth, one must pursue knowledge and identify with the Absolute Mind. Plato also believed that the soul is fully formed prior to birth and is perfect and at one with the Universal Being. The birth process checks this perfection, so education requires bringing latent ideas (fully formed concepts) to consciousness.

In idealism, the aim of education is to discover and develop each individual’s abilities and full moral excellence in order to better serve society. The curricular emphasis is subject matter of mind: literature, history, philosophy, and religion. Teaching methods focus on handling ideas through lecture, discussion, and Socratic dialogue (a method of teaching that uses questioning to help students discover and clarify knowledge). Introspection, intuition, insight, and whole-part logic are used to bring to consciousness the forms or concepts which are latent in the mind. Character is developed through imitating examples and heroes.

Realism

Realists believe that reality exists independent of the human mind. The ultimate reality is the world of physical objects. The focus is on the body/objects. Truth is

objective-what can be observed. Aristotle, a student of Plato who broke with his mentor's idealist philosophy, is called the father of both Realism and the scientific method. In this metaphysical view, the aim is to understand objective reality through "the diligent and unsparing scrutiny of all observable data."

Aristotle believed that to understand an object, its ultimate form had to be understood, which does not change. For example, a rose exists whether or not a person is aware of it. A rose can exist in the mind without being physically present, but ultimately, the rose shares properties with all other roses and lowers (its form), although one rose may be red and another peach colored.

Aristotle also was the first to teach logic as a formal discipline in order to be able to reason about physical events and aspects. The exercise of rational thought is viewed as the ultimate purpose for humankind. The Realist curriculum emphasizes the subject matter of the physical world, particularly science and mathematics. The teacher organizes and presents content systematically within a discipline, demonstrating use of criteria in making decisions. Teaching methods focus on mastery of facts and basic skills through demonstration and recitation. Students must also demonstrate the ability to think critically and scientifically, using observation and experimentation.

Curriculum should be scientifically approached, standardized, and distinct-discipline based. Character is developed through training in the rules of conduct.

Pragmatism (Experientialism)

For pragmatists, only those things that are experienced or observed are real. In this late 19th century American philosophy, the focus is on the reality of experience. Unlike the Realists and Rationalists, Pragmatists believe that reality is constantly changing and that we learn best through applying our experiences and thoughts to problems, as they arise. The universe is dynamic and evolving, a "becoming" view

of the world. There is no absolute and unchanging truth, but rather truth is what works. Pragmatism is derived from the teaching of Charles Sanders Peirce (1839-1914), who believed that thought must produce action, rather than linger in the mind and lead to indecisiveness.

John Dewey (1859-1952) applied pragmatist philosophy in his progressive approaches. He believed that learners must adapt to each other and to their environment. Schools should emphasize the subject matter of social experience. All learning is dependent on the context of place, time, and circumstance. Different cultural and ethnic groups learn to work cooperatively and contribute to a democratic society. The ultimate purpose is the creation of a new social order. Character development is based on making group decisions in light of consequences.

For Pragmatists, teaching methods focus on hands-on problem solving, experimenting, and projects, often having students work in groups. Curriculum should bring the disciplines together to focus on solving problems in an interdisciplinary way. Rather than passing down organized bodies of knowledge to new learners, Pragmatists believe that learners should apply their knowledge to real situations through experimental inquiry. This prepares students for citizenship, daily living, and future careers.

Existentialism

The nature of reality for Existentialists is subjective, and lies within the individual. The physical world has no inherent meaning outside of human existence. Individual choice and individual standards rather than external standards are central. Existence comes before any definition of what we are. We define ourselves in relationship to that existence by the choices we make. We should not accept anyone else's predetermined philosophical system; rather, we must take

responsibility for deciding who we are. The focus is on freedom, the development of authentic individuals, as we make meaning of our lives.

There are several different orientations within the existentialist philosophy. Soren Kierkegaard(1813-1855), a Danish minister and philosopher, is considered to be the founder of existentialism.

His was a Christian orientation. Another group of existentialists, largely European, believes that we must recognize the finiteness of our lives on this small and fragile planet, rather than believing in salvation through God. Our existence is not guaranteed in an afterlife, so there is tension about life and the certainty of death, of hope or despair. Unlike the more austere European approaches where the universe is seen as meaningless when faced with the certainty of the end of existence, American existentialists have focused more on human potential and the quest for personal meaning. Values clarification is an outgrowth of this movement. Following the bleak period of World War II, the French philosopher, Jean Paul Sartre, suggested that for youth, the existential moment arises when young people realize for the first time that choice is theirs, that they are responsible for themselves. Their question becomes “Who am I and what should I do?”

Related to education, the subject matter of existentialist classrooms should be a matter of personal choice. Teachers view the individual as an entity within a social context in which the learner must confront others’ views to clarify his or her own. Character development emphasizes individual responsibility for decisions. Real answers come from within the individual, not from outside authority. Examining life through authentic thinking involves students in genuine learning experiences. Existentialists are opposed to thinking about students as objects to be measured, tracked, or standardized. Such educators want the educational experience to focus on creating opportunities for self-direction and self-actualization. They start with the student, rather than on curriculum content.

sadbhavna