Concept of Teaching

Nature of Teaching:

In its broadest sense, teaching is a process that facilitates learning. Teaching is the specialized application of knowledge, skills and attributes designed to provide unique service to meet the educational needs of the individual and of society. The choice of learning activities whereby the goals of education are realized in the school is the responsibility of the teaching profession.

In addition to providing students with learning opportunities to meet curriculum outcomes, teaching emphasizes the development of values and guides students in their social relationships. Teachers employ practices that develop positive self-concept in students. Although the work of teachers typically takes place in a classroom setting, the direct interaction between teacher and student is the single most important element in teaching.

1. Dynamic, Social & Humane: Influenced by human & social factors
2. An Art & Science: Exercise of being systematic & including talent & creativity
3. Diverse in Application: There are various forms of teaching

Concept of Teaching: Teaching is a complex process that brings a socially desirable behavioural change in a person. In traditional concept, teaching is the act of imparting instructions to the learners in the classroom situation. But in modern concept, teaching is to cause the pupil to learn and acquire the desired knowledge, skills and also desirable ways of living in society. It is a process in which learner, teacher, curriculum and other variables are organised in a systematic and psychological way to attain some pre-determined goals.

Teaching is a part of the teaching-learning process. It is required to bring specific changes in a person according to the need of his society and environment in which he is living. 'Teaching is not an act as it is dynamic in nature, so it is termed as a process. It is also not a fundamental concept as it is greatly influenced by social and human factors.

Some Expert Views about Concept of Teaching:

- **Ryburn's view:** "Teaching is a relationship which keeps the child to develop all his powers."
- **Burton's view:** "Teaching is the stimulation guidance, direction, and encouragement of learning."
- **Smith's view:** In words of B.O. Smith, "Teaching is a system of actions intended to produce learning."

Nature of Teaching:

- **Dynamic, Social, and Humane:** Teaching is not a fundamental concept because it is greatly influenced by social and human factors that are dynamic in themselves.
- **Both Art and Science:** Teaching is both art and science. It calls for the exercise of talent and creativity making it an art and involving repertoire of techni**q**ues, procedures, and skills that can be studied systematically, described and improved making it science.
- **Diverse in Application:** In application, teaching is of diverse nature. It may have various forms as formal, informal, directional, instructional, formational, training, conditioning, indoctrination, talking, showing, doing, remedial, etc.

Characteristics of Teaching:

- **System of actions:** Teaching is a system of actions varied in form and related to content and pupil behaviour under the prevailing physical and social conditions.
- **Professional activity:** It is a professional activity involving a teacher and student with a view to the development of students' personality. Professionalism helps students in being regular and making harmony with their objects towards those they are concentrated.
- **Subjected to analysis and assessment**: Teaching can be analysed and assessed and analysis and assessment provide feedback for further improvement.
- **Interactive process:** Teaching is highly dominated by communication skills. Teaching is an interactive process carried with purpose and objectives.
- **Specialized Task:** It is a specialized task and may be taken as a set of skills for the realization of certain objectives.
- **Collection of various modes:** Teaching is a collection of various modes of itself. It is a broader term. Terms like conditioning, training, instruction, indoctrination denote a kind of teaching. They are a part of teaching but not a synonym with teaching. These are various modes of teaching contributing to teaching.

Goals of Teaching:

The aims of teaching concept with respect to its various modes are as follows-

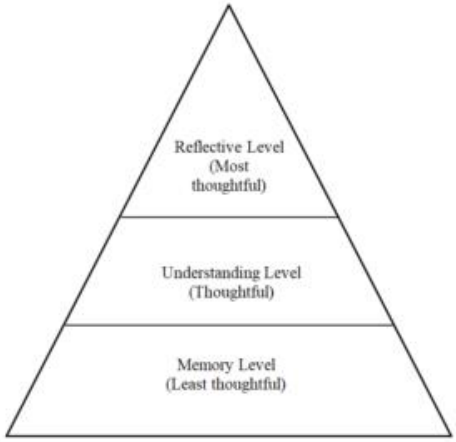
- Teaching – To bring changes in the behaviour of students.
- Conditioning – To improve the learning skills of students.
- Training – Shaping behaviour and conduct.
- Instruction – Acquisition of knowledge.
- Indoctrination – Formation of belief.

Levels of Teaching

We all know that teaching is a purposeful activity. Through teaching, a teacher brings a desirable change in the learners. Both the concepts of teaching and learning are interrelated to each other. The development of the all-round personality of the learner is the final goal of teaching and learning. During teaching, an interaction takes place between an experienced person (teacher) and an inexperienced one (student). Here the main aim is to bring change in the behaviour of the student.

Teachers teach students at three levels. They have to keep in mind about the developmental stage of the learners so that desired educational objectives can be achieved. These three levels are

1. **Memory level: Thoughtless teaching**
2. **Understanding level: Thoughtful teaching**
3. **Reflective level: Upper thoughtful level**



Hierarchy of Levels of Teaching

Memory Level of Teaching (MLT)

The objective of the Memory Level of teaching is just to impart information or knowledge to the learner. This knowledge or information is factual in nature, which is acquired through a mechanical process (i.e. memorization or rote learning).

Memory Level of teaching covers only the knowledge-based objective of Bloom's taxonomy where the students learn to identify, recall, or remember the objects, events, ideas, and concepts and retain them in memory.

Memory level teaching lacks insight. Psychologically, it is cognitive level teaching.

Important Points of Memory Level of Teaching (MLT):

- It is supported by Herbart Theory of Appreciation, which states that this level of teaching seeks the learner to acquaint himself with the relationship between the facts and principles.
- It is the first stage of teaching to get factual information.

- Useful for children in the lower classes because of their intellect is under development, and they have a rote memory.
- MLT aims to get factual information, to train memory, to retrain the learning material in-memory storage, to reproduce and recognize the learned information when required
- Teacher dominated methods are used- like drill, review, and revision and asking questions.
- The evaluation system mainly includes oral, written, and essay-type examinations.
- Good memory includes rapidity in learning, stability of retention, rapidity in recalling, and ability to bring only desirable contents to the conscious level.
- Memory level teaching acts as the first step for understanding and reflective levels of teaching. It is a pre-requisite for understanding level teaching.

Merits/ Advantages Memory Level of Teaching:

- Useful for young children
- Useful for the acquisition of facts, information of models and structure
- Help children learn a new concept
- Useful for slow learners
- The basis for understanding and reflective level of teaching.

Demerits / Disadvantages of Memory Level of Teaching:

- Not suitable for higher classes
- Use of rote memory
- Dominance of teacher
- Little interaction in the classroom
- No room for initiation and self-learning for the students
- Not intrinsic motivation
- Problem of classroom management
- Loss of retention and recall

Understanding Level of Teaching (ULT)

It comes in between the memory level and reflective level. This stage of teaching involves a moderate level of thoughtful behaviour. It is a pre-requisite for the reflective level teaching-learning, which requires the use of higher mental processes. The term "understanding" literally means to comprehend, to grasp, and to have knowledge of, to learn, to interpret and to infer, etc.

Morris, L.Bigge, in his book, '**Learning theory for Teachers**', defines that understanding level teaching, "seeks to acquaint students with the relationships between generalizations and particulars, between principles and solitary facts, and which show- the use to which the principles may be applied."

Herbart mentions three forms of mental reality which play an important role in teaching-learning at the understanding level. They are **sense impressions**, **images,** and **elective elements of pleasure and pain**. In Herbart's arrangements, the teacher is conceived as an architect as well as the builder of the minds of the students by manipulating ideas to construct a student's circle of thought.

He advocated six steps of teaching:

- preparation,
- presentation,
- comparison,
- generalization,
- application, and
- evaluation

Morrison very clearly stated that understanding is not merely being able to recall something; it is not mere generalization deduced from specific facts; it is an insight into how it may be used in future situations. Morrison asserted that the outcome of all teaching is ' Mastery' and not memorization of facts. He proposed a unit plan, each unit representing an insight which is relatively complete in itself.

Important points:

- Morrison is the main proponent of understanding level of teaching.
- It is 'memory plus insight' as it goes beyond just memorizing facts. It focuses on the mastery of the subject.
- It makes pupils understand generalizations, principles, and facts.
- It provides more and more opportunities for the students to develop 'intellectual behaviour'.
- It provides an active role for both the pupil and the teacher for the assimilation of facts. 6. The evaluation system mainly includes both essay and objective-type questions.

Merits/ advantages of Understating level of Teaching (ULT):

- Effective learning
- Development of different cognition abilities
- Sets stages for entering into the Reflective Level of Teaching
- Effective classroom interaction

Demerits or disadvantages of Understanding Level of Teaching (ULT):

- Ignores higher cognitive abilities
- Less emphasis on intrinsic motivation
- No individualized learning
- Teacher centred

Reflective Level of Teaching (RLT)

This Level of teaching is the highest level of teaching-learning activity. It is the stage of learning when students do not merely repeat and revise or answer the questions as asked for; nor do they only understand, learn, interrelate or interpret the concepts but also they ponder upon, contemplate and pay serious thoughtful consideration to the presented contents.

The main objectives of Reflective Level of Teaching are:

- To develop insight into the learner to solve problems.
- To develop rational and critical thinking in the students.
- To develop the ability of independent thinking and decision making in the students.

Important Points:

- Hunt is the main proponent of reflective level of teaching.
- It is the highest level of teaching and includes both ULT and MLT.
- It is problem-centric approach of teaching.
- The students are assumed to adopt some sort of research approach to solve the problem.
- Classroom environment is to be sufficiently 'open and independent'. The learners are self-motivated (intrinsic) and active.
- The aim is to develop the reflective power of learners so that they can solve problems of their lives by reasoning, logic, and imagination, and lead successful and happy lives.
- The pupil occupies the primary place and teacher assumes the secondary place.
- Essay-type test is used for evaluation. Attitude, belief, and involvement are also evaluated.

Merits or Advantages of Reflective Level of Teaching (RLT):

- It is the most thoughtful mode of operation.
- Learner-centred approach
- Development of problem-solving ability
- Useful for gifted children.
- Provides maximum flexibility
- Self-motivation
- Development of creativity

Demerits of Reflective Level of Teaching:

- It is not suitable for lower classes
- It is a time-consuming process.
- It is not applicable for dull students.
- There is an excess burden to the teacher.

Requirements of Teaching

The teaching process involves the following variables:

1. Dependent Variable:

The student is a dependent variable. He is subjected to changes and developments through the efforts of the teacher and teaching process. In the process of teaching, the dependent variable plays the functional or active part.

2. Independent Variable:

The teacher is an independent variable. He is responsible for the functioning of students, the dependent variables. He is free to act in the process while students are **q**uite dependent on him. The teacher does plans, organizes, leads and controls the process of teaching. Like dependent variables, independent variables also play the functional or active part.

3. Intervening Variables

There is a need for desirable interaction between the dependent and the independent variable to achieve the goals of teaching. This role is played by the intervening variables. The content of teaching, methods and techni**q**ues, tactics and strategies management of instructional material and teaching environments, etc., are the Intervening Variables.

Basic requirements of teaching are:

- All three variables of teaching
- Professionalism
- Suitable environment
- Teacher-student relationship
- Student's discipline
- Teacher's devotion to teaching, and also, on the other hand, student's devotion to learning.

Objectives of Teaching

Teacher education has to become more sensitive to the emerging demands from the school system. For this, it has to prepare teachers for a dual role of;

Encouraging, supportive and humane facilitator in teaching learning situations who enables learners (students) to discover their talents, to realize their physical and intellectual potentialities to the fullest, to develop character and desirable social and human values to function as responsible citizens; and,

An active member of the group of persons who make conscious effort to contribute towards the process of renewal of school curriculum to maintain its relevance to the changing societal needs and personal needs of learners, keeping in view the experiences gained in the past and the concerns and imperatives that have emerged in the light of changing national development goals and educational priorities.

These expectations suggest that teacher operates in a larger context and its dynamics as well as concerns impinge upon her functioning. That is to say, teacher has to be responsive and sensitive to the social contexts of education, the various disparities in the background of learners as well as in the macro national and global contexts, national concerns for achieving the goals of equity, parity, and social justice as also excellence.

To be able to realize such expectations, TE has to comprise such features as would enable the student teachers to

- Care for children, and who love to be with them;
- Understand children within social, cultural and political contexts;
- View learning as a search for meaning out of personal experience;
- Understand the way learning occurs, possible ways of creating conductive conditions for learning, differences among students in respect of the kind, pace and styles of learning.
- View knowledge generation as a continuously evolving process of reflective learning.
- Be receptive and constantly learning.
- View learning as a search for meaning out of personal experience, and knowledge generation as a continuously evolving process of reflective learning.
- View knowledge not as an external reality embedded in textbooks, but as constructed in the shared context of teaching learning and personal experience.
- Own responsibility towards society, and work to build a better world.
- Appreciate the potential of productive work and hands-on experience as a pedagogic medium both inside and outside the classroom.
- Analyze the curricular framework, policy implications and texts. Have a sound knowledge base and basic proficiency in language.
- The objectives of teacher education would therefore be to, Provide opportunities to observe and engage with children, communicate with and relate to children Provide opportunities for self-learning, reflection, assimilation and articulation of new ideas; developing capacities for self directed learning and the ability to think, be self-critical and to work in groups.
- Provide opportunities for understanding self and others (including one‘s beliefs, assumptions and emotions); developing the ability for self analysis, self-evaluation, adaptability, flexibility, creativity and innovation.
- Provide opportunities to enhance understanding, knowledge and examine disciplinary knowledge and social realities, relate subject matter with the social milieu and develop critical thinking.

- Provide opportunities to develop professional skills in pedagogy, observation, documentation, analysis, drama, craft, story-telling and reflective inquiry.

The most remarkable objectives of teaching are

1. Au Round Development of a Learner: The prime objective of teaching is the all round development of the learner that includes his physical, mental and spiritual or moral development. This objective is the basis of Gandhi's idea of basic education.

2. Behavior change: The education should be imparted to a learner in such a way that it reflects the attitude, behavior and personality of the learner.

3. Development of Adjustment The manner of teaching should be such that it makes the pupils feel at home in his class room. The teacher has to ensure that the learner is well adjusted to the environment which includes his classmates, school mates and other members of his society at large.

4. Learner's Mental Ability The teacher should take into account the mental ability of the pupils while teaching. This will enable the teacher to make himself more communicative with his students and in turn the students will have a better understanding of what is being taught to them.

5. Transmission of Knowledge The process of teaching should ensure that the knowledge is transmitted from the teacher to the pupil. For achieving this objective, the teaching need to be very communicative and the process of teaching should ensure the pupil participation in it. The more the pupil are encouraged to interact with the teacher, the more the chances of transmission of knowledge.

6. Assimilation of Lessons Teaching does not stop at delivering lectures and giving home tasks to the students. It has to be responsible for the assimilation of what is taught to the students. The manner of teaching should be pleasant enough to make the students grasp whatever they are taught.

7. Friendly Environment One of the primary objectives of teaching is to make the environment of the place of teaching more friendly and conducive to learning. His all attention should remain focused to the teaching and he, should not get irritated with the non-conducive atmosphere of the class room.

Individual Differences: Types, Causes and Role

Definitions of Individual Differences:

1. Drever James:

"Variations or deviations from the average of the group, with respect to the mental or physical characters, occurring in the individual member of the group are individual differences."

2. Good, C.V.:

"The variation or deviations among individual is regard to a single characteristics or a number of characteristics, those differences which in their totality distinguish one individual from another."

3. Skinner, C.E.:

"Today we think of individual differences as including any measurable aspect of the total personality."

4. Woodworth, R.S. and Marquis, D.G.:

"Individual differences are found in all psychological characteristics physical mental abilities, knowledge, habit, personality and character traits."

5. John P.De Ceeceo

"The psychology of individual differences is largely the study of group differences. This study classifies individuals by age, traits, sex, race, social class and so on, and observes the differences within and between those groups. Physical, mental, social and cultural differences etc. are being studied, under individual differences."

Perhaps the first task of every teacher in a class should be to know and study individual differences among his pupils. Individual differences in bodily appearance and physique, habits and skills, interests and temperaments, abilities and attainments have already been recognised.

According to Skinner, "Today we think of individual differences as including any measurable aspect of the total personality." It is clear from this definition of individual differences that it comprehends every aspect of human personality which is in some manner measurable.

Types of Individual Differences:

1. Physical differences:

Shortness or tallness of stature, darkness or fairness of complexion, fatness, thinness, or weakness are various physical individual differences.

2. Differences in intelligence:

There are differences in intelligence level among different individuals. We can classify the individuals from super-normal (above 120 I.Q.) to idiots (from 0 to 50 I.Q.) on the basis of their intelligence level.

3. Differences in attitudes:

Individuals differ in their attitudes towards different people, objects, institutions and authority.

4. Differences in achievement:

It has been found through achievement tests that individuals differ in their achievement abilities. These differences are very much visible in reading, writing and in learning mathematics.

These differences in achievement are even visible among the children who are at the same level of intelligence. These differences are on account of the differences in the various factors of intelligence and the differences in the various experiences, interests and educational background.

5. Differences in motor ability:

There are differences in motor ability. These differences are visible at different ages. Some people can perform mechanical tasks easily, while others, even though they are at the same level, feel much difficulty in performing these tasks.

6. Differences on account of sex:

McNemar and Terman discovered the following differences between men and women, on the basis of some studies:

(i) Women have greater skill in memory while men have greater motor ability.

(ii) Handwriting of women is superior while men excel in mathematics and logic.

(iii) Women show greater skill in making sensory distinctions of taste, touch and smell etc., while men show greater reaction and conscious of size- weight illusion.

(iv) Women are superior to men in languages, while men are superior in physics and chemistry.
(v) Women are better than men in mirror drawing. Faults of speech etc. in men were found to be three times of such faults in women.
(vi) Women are more susceptible to suggestion while there are three times as many colour blind men as there are women.
(vii) Young girls take interest in stories of love, fairy tales, stories of the school and home and day-dreaming and show various levels in their play. On the other hand boys take interest in stories of bravery, science, war, scouting, stories of games and sports, stories and games of occupation and skill.

7. Racial differences:

There are different kinds of racial differences. Differences of environment is a normal factor in causing these differences. Karl Brigham has composed a list on the basis of differences in levels of intelligence among people who have migrated to United States from other countries.
On the basis of these average differences between the races, the mental age of a particular individual cannot be calculated since this difference is based on environment.

8. Differences due to nationality:

Individuals of different nations differ in respect of physical and mental differences, interests and personality etc. 'Russians are tall and stout'; 'Ceylonese are short and slim'; 'Germans have no sense of humour'; 'Yellow races are cruel and revengeful'; 'Americans are hearty and frank'; Indians are timid and peace-loving' and the like observations enter into our common talk.

9. Differences due to economic status:

Differences in children's interests, tendencies and character are caused by economic differences.

10. Differences in interests:

Factors such as sex, family background level of development, differences of race and nationality etc., cause differences in interests.

11. Emotional differences:

Individuals differ in their emotional reactions to a particular situation. Some are irritable and aggressive and they get angry very soon. There are

others who are of peaceful nature and do not get angry easily. At a particular thing an individual may be so much enraged that he may be prepared for the worst crime like murder, while another person may only laugh at it.

12. Personality differences:

There are differences in respect of personality. On the basis of differences in personality, individuals have been classified into many groups.

Spranger, for example, has classified personalities into six types:

(a) Theoretical,
(b) Economic
(c) Aesthetic,
(d) Social,
(e) Political, and
(f) Religious.

Jung classified people into three groups:

(a) Introverts,
(b) Extroverts, and
(c) Ambiverts.

Trottor divided individuals into:

(a) Stable minded, and
(b) Unstable minded.

Jordon thinks of personalities into:

(a) Active, and
(b) Reflective type.

Thorndike has classified people into four categories on the basis of thinking:

(a) Abstract thinkers,
(b) Ideational thinkers,
(c) Object thinkers, and
(d) Thinkers in whom sensory experience is predominant.

Terman has classified people into nine classes according to their level of intelligence:

(a) Genius,
(b) Near genius
(c) Very superior,

(d) Superior,
(e) Average,
(f) Backward,
(g) Feebleminded,
(h) Dull, and
(i) Idiot.

It is an admitted fact that some people are honest, others are dishonest, some are aggressive, others are humble, some are social, others like to be alone, some are critical and others are sympathetic. Thus we see that the differences in personality are dependent on personality traits. Teacher should keep in mind these differences while imparting education to the pupils.

Causes of Individual Differences:

Some of the main causes of individual differences are as under:

1. Heredity:

One of the most significant and chief causes of individual differences is heredity. Individuals inherit various physical traits like face with its features, colour of eyes and hair, type of skin, shape of skull and size of hands, colour blindness, baldness, stub-finger and tendency to certain diseases like cancer and tuberculosis, mental traits like intelligence, abstract thinking, aptitudes and prejudices. Now it is an admitted fact that heredity differences result in the quantity and rate of physical as well as mental development being different and different individuals.

2. Environment:

Environment significantly influences individual differences. Changes in child's environment are reflected in the changes in his personality. Psychologically speaking, a person's environment consists of sum total of stimulation which he receives from conception until his death.

Environment consists of physical, intellectual, social, moral, political, economic and cultural forces. All these forces cause individual differences. Modern psychologists believe that individual differences are caused by both heredity and environment. Personality is the outcome of mutual interaction between heredity and environment.

3. Influence of caste, race and nation:

Individuals of different castes and races exhibit very marked differences. It is generally seen that son of a Kshatriya has a more of courage in him while the son of a trader has the traits of business.

Similarly individuals of different nations show differences in respect of their personality, character and mental abilities. These are the outcome of their geographical, social and cultural environment. Many studies have shown the existence of differences between Americans and Negroes, Chineese and Japaneese, English and Indian individuals.

4. Sex differences:

Development of boys and girls exhibits differences due to difference in sex. The physical development of the girl takes place a year or two earlier than the boys. Between the age of 11 and 14, girls are taller and heavier than the boys. After 15, boys start winning the race.

Girls are kind, affectionate, sympathetic and tender while the boys are brave, hard, choleric, efficient and competent.

5. Age and intelligence:

Physical, intellectual and emotional development is caused by the growth in age. Many individuals differ because of the differences in intelligence. Individuals who are below the average in intelligence and mental age find much difficulty in learning and the average intelligent persons can learn quickly.

6. Temperament and emotional stability:

Some people are by temperament active and quick, while others are passive and slow, some humorous and others short tempered. Emotional stability of the individual is differently affected by physical, mental and environmental factors. Differences in emotional stability cause individual differences.

7. Other Causes:

Interests, aptitudes, achievements, sentiments, character, educational and home background lead to individual differences.

8. Economic condition and education:

Individual differences are caused by economic condition of the parents and the education of the children. It is not possible for the children of two economic classes to have a similarity and equality.

Role of Individual Differences in Education:

One of the important objectives of modern education is the complete development of the individual. Individuals have different goals, different interests, different emotional problems and different abilities. We cannot afford to ignore these individual differences in imparting education to children. Since school work is planned on group basis it presents a formidable challenge to all teachers.

Hence some practical procedures for adapting school work to individual differences are suggested:

1. Limited size of the class:

Generally there are 50 or more than 50 students in a class. In such a large class, it is not possible for the teacher to pay individual attention to the students. The size of the class should be small. It should be divided into various units so that after class-room work their various difficulties may be found out.

2. Proper division of the class:

Now there are separate classes for the students, who have different intelligence. While bringing about this classification, the teacher should keep in mind the difference in age, interests, emotional and social qualities.

3. Home task:

The teacher should assign home task to the students while keeping in view the individual differences.

4. Factor of sex:

Boys and girls are to play different roles in society. Hence the factor of sex should be kept in mind.

5. Curriculum:

The curriculum should be modified to suit the needs of all types of children. A large number of subjects should be included in the curriculum so that education can be provided to each child according to his interests, needs and abilities. Curriculum should not be rigid but it should be flexible.

If we lay down the same curriculum for all the students, the brilliant students will not be able to have full mental diet, and the backward

students and the students of lower I.Q. will lag far behind in the class, and they may start playing truancy from the school.

6. Methods of Teaching:

Methods of teaching should be chosen on the basis of individual differences. It is not advisable to use the same method of education in the case of all children-gifted or backward.

7. Educational Guidance:

Teacher should impart educational guidance to the students while keeping in view their individual differences. He can assist them in the selection of educational career, selection of subjects, selection of books, selection of hobbies and co-curricular activities and in many other areas connected with education.

8. Vocational Guidance:

While keeping in view the individual differences the teacher can guide the students in the vocation that they should adopt.

9. Individual Training:

Many plans and techniques for individualizing instructions have been advocated.

Some of these plans are as under:

(i) Dalton Plan:

This plan was introduced by Miss Helen Parkhurst at Dalton. According to this plan, the school is regarded as a 'children house.' The principles underlying the plan are freedom, co-operation and allocation of time. The pupils are free to continue without interruption the work in which they are absorbed, unhindered by time tables.

They are not taught in classrooms. They are given subjects that suit their interests. The advantage of this plan is that each pupil is allowed to proceed at his own rate and in accordance with this individual ability. Thus the instructions are completely individualized.

(ii) Morrison Plan:

This Plan was devised by Professor H.Q. Morrison of the University of Chicago. This plan is based on directed guidance and stresses unit assignment. To establish learning unit is an important task in the Morrison plan. The plan is based on individual needs and interests.

(iii) Winnetka Plan:

This plan was instituted by C.W. Washburne in the school of Winnetka, Illinois. This plan is based on the principle that the pupils should be allowed to follow his own rate of learning in each of the subjects of his curriculum. Before instituting this plan it is observed through an examination that how much an individual already knows. On the basis of it, specific learning unit is planned for him.

Progress is checked by the pupils himself by means of self-administered tests. The advantages of this plan are that the backward and the intelligent are to proceed at their own rates. Moreover, there are no failures since the pupil is measured against his own progress.

(iv) Contract Plan:

In this plan, the subjects of study are determined like the Dalton method; the pupil's progress is measured through tests like the Winnetka method. Thus this plan is a synthesis of Dalton and Winnetka methods.

(v) Project method:

This method was suggested by Kilpatrick. In this method each member of the group can work in terms of his interest and ability. Hence this method is also in the direction of individualization of instructions.

MOOCs and Pedagogy: Teacher-Centered, Student-Centered, and Hybrids (Part 1)

From instructional television in the 1950s through updated versions of "distance education, "a professor professing in front of a camera is familiar and surely will dominate many of the newly established platforms (e.g., Coursera, Udacity, edX). Whether it will be the "University Classroom of the Future," I cannot say for sure. But the photo makes the professor front and center in teaching content and skills.

The prevailing version of MOOCs offers traditional, technology-enriched teacher-centered instruction, that is, lecturing to large groups of people, asking occasional questions, online discussion sections, and multiple-choice questions on exams. Such MOOCs possess advantages of efficiency in delivering information especially in particular subjects (e.g. procedural knowledge in computer science). Computer science departments at Stanford, MIT, and Harvard launched the initial MOOC

offerings, not the Humanities, social sciences, or natural sciences, according to Keith Devlin, a Stanford University mathematician currently teaching a MOOC course on mathematical thinking (and the "Math Guy" on NPR).

These courses, in the words of George Siemens, a Canadian professor at Athabasca University–Canada's Open University–who started an early version of MOOC in 2008, duplicate knowledge for learners who then replicate that knowledge.

"In a traditional course, the instructor creates knowledge coherence by bounding the domain of knowledge that the learners will explore: i.e. this is the course text, here are the readings, quizzes will validate that you've learned what I think is important, etc."

There are other ways of teaching these courses, however. Some enthusiasts for MOOCs see opportunities for non-traditional forms of teaching where students learn from one another, form online communities, crowd-source answers to problems, create networks that distribute learning in ways that seldom occur in bricks-and-mortar colleges and universities. In other words, student-centered or learner-centered pedagogy.

Again, George Siemens:

"In all of the MOOCs I've run, readings and resources have been used that reflect the current understanding of experts in the field. We ask learners, however, to go beyond the declarations of knowledge …. Learners need to create and share stuff – blogs, articles, images, videos, artifacts, etc…. Our first MOOC … started by being primarily centered in a Moodle discussion forum. As the course progressed, interactions were scattered over many tools and technologies. We ended up with many spaces of interactions: Second Life, PageFlakes, Google Groups, Twitter, Facebook, Plurk, blogs, wikis, YouTube, among dozens of others."

To Keith Devlin, "the key to real learning has always been bi-directional human-human interaction (even better in some cases, multi-directional, multi-person interaction), not unidirectional instruction." He believes that:

"while the popular image of a MOOC centers on lecture-videos and multiple-choice quizzes, what Humanities, Arts, and Science MOOCs (including mine) are about is community building and social interaction. For the instructor … the goal in such a course is to create a learning community. To create an online experience in which thousands of self-motivated individuals from around the world can come together for a predetermined period of intense, human–human interaction, focused on a clearly stated common goal."

And hybrid versions of teacher- and student-centered instruction is about "flipping" classes ala Salman Khan, that is, undergraduate students view the professor's lecture in dorm rooms or at home and then meet with teachers and fellow students face-to-face for closer examination of the concepts in the lecture, and deeper inquiry into the content. What others call blended learning. (For a taxonomy of blended learning types in K-12, see Classifying blended-learning2 .

In MOOCs, of course, "flipping" cannot be done easily even with teaching assistants, email exchanges, and the like although Devlin, Siemens, and others see social media–the Facebook model–as the instrument for creating peer learning and communities of learners in "flipped" models of blended learning.

Here, then, at the early stage of the hype cycle–somewhere between the "Technology Trigger" and the "Peak of Inflated Expectations" are three kinds of pedagogy vying for attention among MOOCs. Which will prevail?

Based upon my experience in higher education and the research I and others have done, technology-enriched traditional teacher-centered instruction will continue to dominate MOOCs for the following reasons:

1. Professor-centered instruction in courses where procedural knowledge and skills are expected to be learned (e.g., math, computer science, entry-level social sciences, engineering) is easier to deliver to students and, after initial start-up costs are factored in, cheaper than in face-to-face classrooms. At least to one researcher, it will be shown that students learn as much from such technology-delivered instruction as if they were listening to a professor in undergraduate lecture halls. See Bowen lectures SU 102-1 .

2. In those institutions where faculty are expected to do research and publish, the incentives of tenure and promotion drive faculty behavior. Professors are rewarded for spending far more time on research than spending time on developing and teaching student-centric courses and learning communities. Thus, in research-driven institutions, most professors will not invest in designing and teaching student-centric courses.
For these reasons, chances are that the photo at the top of this post captures a typical higher education classroom in the years to come.

The SWAYAM PRABHA is a group of 32 DTH channels devoted to telecasting of high-quality educational programmes on 24X7 basis using the GSAT-15 satellite. Every day, there will be new content for at least (4) hours which would be repeated 5 more times in a day, allowing the students to choose the time of their convenience. The channels are uplinked from BISAG, Gandhinagar. The contents are provided by NPTEL, IITs, UGC, CEC, IGNOU, NCERT and NIOS. The INFLIBNET Centre maintains the web portal.

The DTH Channels shall cover the following:

- **a).**Higher Education: Curriculum-based course contents at post-graduate and under-graduate level covering diverse disciplines such as arts, science, commerce, performing arts, social sciences and humanities, engineering, technology, law, medicine, agriculture, etc. All courses would be certification-ready in their detailed offering through SWAYAM, the platform being developed for offering MOOCs courses.
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- **b).**School education (9-12 levels): modules for teacher's training as well as teaching and learning aids for children of India to help them understand the subjects better and also help them in preparing for competitive examinations for admissions to professional degree programmes.

- **c).**Curriculum-based courses that can meet the needs of life-long learners of Indian citizens in India and abroad.
- **d).**Assist students (class 11th & 12th) prepare for competitive exams.

Positivism & Post-Positivism

Let's start our very brief discussion of philosophy of science with a simple distinction between ***epistemology*** and ***methodology***. The term epistemology comes from the Greek word epistêmê, their term for knowledge. In simple terms, epistemology is the philosophy of knowledge or of how we come to know. Methodology is also concerned with how we come to know, but is much more practical in nature. Methodology is focused on the specific ways – the methods – that we can use to try to understand our world better. Epistemology and methodology are intimately related: the former involves the *philosophy* of how we come to know the world and the latter involves the *practice*.

When most people in our society think about science, they think about some guy in a white lab coat working at a lab bench mixing up chemicals. They think of science as boring, cut-and-dry, and they think of the scientist as narrow-minded and esoteric (the ultimate nerd – think of the humorous but nonetheless mad scientist in the *Back to the Future* movies, for instance). A lot of our stereotypes about science come from a period where science was dominated by a particular philosophy – ***positivism*** – that tended to support some of these views. Here, I want to suggest (no matter what the movie industry may think) that science has moved on in its thinking into an era of ***post-positivism*** where many of those stereotypes of the scientist no longer hold up.

Let's begin by considering what positivism is. In its broadest sense, positivism is a rejection of metaphysics (I leave it you to look up that term if you're not familiar with it). It is a position that holds that the goal of knowledge is simply to describe the phenomena that we

experience. The purpose of science is simply to stick to what we can observe and measure. Knowledge of anything beyond that, a positivist would hold, is impossible. When I think of positivism (and the related philosophy of logical positivism) I think of the behaviorists in mid-20th Century psychology. These were the mythical 'rat runners' who believed that psychology could only study what could be directly observed and measured. Since we can't directly observe emotions, thoughts, etc. (although we may be able to measure some of the physical and physiological accompaniments), these were not legitimate topics for a scientific psychology. B.F. Skinner argued that psychology needed to concentrate only on the positive and negative reinforcers of behavior in order to predict how people will behave – everything else in between (like what the person is thinking) is irrelevant because it can't be measured.

In a positivist view of the world, science was seen as the way to get at truth, to understand the world well enough so that we might predict and control it. The world and the universe were deterministic – they operated by laws of cause and effect that we could discern if we applied the unique approach of the scientific method. Science was largely a mechanistic or mechanical affair. We use deductive reasoning to postulate theories that we can test. Based on the results of our studies, we may learn that our theory doesn't fit the facts well and so we need to revise our theory to better predict reality. The positivist believed in *empiricism* – the idea that observation and measurement was the core of the scientific endeavor. The key approach of the scientific method is the experiment, the attempt to discern natural laws through direct manipulation and observation.

OK, I am exaggerating the positivist position (although you may be amazed at how close to this some of them actually came) in order to make a point. Things have changed in our views of science since the middle part of the 20th century. Probably the most important has been our shift away from positivism into what we term *post-positivism*. By post-positivism, I don't mean a slight adjustment to or revision of the

positivist position – post-positivism is a wholesale rejection of the central tenets of positivism. A post-positivist might begin by recognizing that the way scientists think and work and the way we think in our everyday life are not distinctly different. Scientific reasoning and common sense reasoning are essentially the same process. There is no difference in kind between the two, only a difference in degree. Scientists, for example, follow specific procedures to assure that observations are verifiable, accurate and consistent. In everyday reasoning, we don't always proceed so carefully (although, if you think about it, when the stakes are high, even in everyday life we become much more cautious about measurement. Think of the way most responsible parents keep continuous watch over their infants, noticing details that non-parents would never detect).

One of the most common forms of post-positivism is a philosophy called ***critical realism***. A critical realist believes that there is a reality independent of our thinking about it that science can study. (This is in contrast with a ***subjectivist*** who would hold that there is no external reality – we're each making this all up!). Positivists were also realists. The difference is that the post-positivist critical realist recognizes that all observation is fallible and has error and that all theory is revisable. In other words, the critical realist is *critical* of our ability to know reality with certainty. Where the positivist believed that the goal of science was to uncover the truth, the post-positivist critical realist believes that *the goal of science is to hold steadfastly to the goal of getting it right about reality, even though we can never achieve that goal*! Because all measurement is fallible, the post-positivist emphasizes the importance of multiple measures and observations, each of which may possess different types of error, and the need to use ***triangulation*** across these multiple errorful sources to try to get a better bead on what's happening in reality. The post-positivist also believes that all observations are theory-laden and that scientists (and everyone else, for that matter) are inherently biased by their cultural experiences, world views, and so on. This is not cause to give up in despair, however. Just because I have my world view based on my

experiences and you have yours doesn't mean that we can't hope to translate from each other's experiences or understand each other. That is, post-positivism rejects the ***relativist*** idea of the ***incommensurability*** of different perspectives, the idea that we can never understand each other because we come from different experiences and cultures. Most post-positivists are ***constructivists*** who believe that we each construct our view of the world based on our perceptions of it. Because perception and observation is fallible, our constructions must be imperfect.

So what is meant by ***objectivity*** in a post-positivist world? Positivists believed that objectivity was a characteristic that resided in the individual scientist. Scientists are responsible for putting aside their biases and beliefs and seeing the world as it 'really' is. Post-positivists reject the idea that any individual can see the world perfectly as it really is. We are all biased and all of our observations are affected (theory-laden). Our best hope for achieving objectivity is to triangulate across multiple fallible perspectives! Thus, objectivity is not the characteristic of an individual, it is inherently a social phenomenon. It is what multiple individuals are trying to achieve when they criticize each other's work. We never achieve objectivity perfectly, but we can approach it. The best way for us to improve the objectivity of what we do is to do it within the context of a broader contentious community of truth-seekers (including other scientists) who criticize each other's work. The theories that survive such intense scrutiny are a bit like the species that survive in the evolutionary struggle. (This is sometimes called the ***natural selection theory of knowledge*** and holds that ideas have 'survival value' and that knowledge evolves through a process of variation, selection and retention). They have adaptive value and are probably as close as our species can come to being objective and understanding reality.

Clearly, all of this stuff is not for the faint-of-heart. I've seen many a graduate student get lost in the maze of philosophical assumptions that contemporary philosophers of science argue about. And don't think

that I believe this is not important stuff. But, in the end, I tend to turn pragmatist on these matters. Philosophers have been debating these issues for thousands of years and there is every reason to believe that they will continue to debate them for thousands of years more. Those of us who are practicing scientists should check in on this debate from time to time (perhaps every hundred years or so would be about right). We should think about the assumptions we make about the world when we conduct research. But in the meantime, we can't wait for the philosophers to settle the matter. After all, we do have our own work to do!

Teaching Aptitude Learner's Characteristics

A Learner is someone who is consistently learning. We all are the learner at some or the other time in our daily life. To be precise, a learner at a particular time is that person who is learning about a particular subject.

For a decision maker, it is important to know the learner's characteristics. It is essential to know what factors affect their learning. Learning can be described that the process of acquiring new or modifying existing knowledge, skill values, behaviour and preferences.

Learning is strongly based on the intellectual level, cognitive ability, perception, personality and attitude of a learner. As individual many factors affect the learning of a person. They are bound to get influenced by the social arena, cultural habits, and willingness of a person to adopt change.

No successful outcome strategy can be expected without analyzing learner characteristics. Learner characteristics can be identified by collecting the information based on their cognitive, physiological, affective and social characteristics. Different methods are used to collect information about learners such as surveys, interviews, observation, current knowledge/ skill levels and performance result.

Learner's characteristics are many such as personal, academic, social/emotional and/or cognitive in nature.

Personal characteristics can be defined as demographic information about the learner such as age, gender, cultural background, maturation,

language, social economic status and specific needs of a learner group such as particular skills and disabilities for and/or impairments to learning.
Academics characteristics of respondents including the education type, education level, and knowledge. The learner has social/emotional characteristics.

Cognitive characteristics of learner can be described such as memory, mental pressure, solve problems, intellectual skill, remembers, organizes and store information in the brain.

Definitions of Learning
Gardener Murphy: “The term learning covers every modification in behaviour to meet environmental requirements.”
Henry P. Smith: “Learning is the acquisition of new behaviour or the strengthening or weakening of old behaviour as the result of experience.”
Learning means a permanent change in the behaviour of the learner through experience, instructions, and study. It is very di□cult to measure the learning but the result of learning can be measured. Learner characteristics can be described as measuring the characteristics of learners such as behavioural nature, attitudes and psychological towards everything related to learning.
In learner characteristics aptitude is defined according to Cronbach and Snow as “any characteristic of a person that forecasts his probability of success under a given treatment” or “whatever makes a person ready to learn rapidly in a particular situation (or, more generally, to make effective use of a particular environment)” Various components were described in learner characteristics such as gender, attitude, motivation, learner style and cultural background.

Learner’s characteristics-

During a learning phase, a learner faces different issues such as doubts, fear of exam, exam pattern, study material and syllabus etc. These problems can be tackled through hard work, consistent efforts and more practice.

There are the few characteristics of learners given below-

 Good learners are curious

A learner is never satisfied. They are always hungry for information, love the discovery and try to find out the solution to problems. Learner collects the information about best study material and latest information which was provided by UGC.

 Carefully understanding

A good learner possesses the attribute of careful understanding. Most of the knowledge can be gained with the hard work and efforts. A learner should try to understand the subject matter carefully. An effective learner always tries to interpret the stimulus, combine and differentiate them and give them some meaning.

Learner’s characteristics are divided into following categories which are explained as follows:

 Social and Personal quality-

A learner who has personal quality understands subject matter easily and solves the problems very fast. Different learners have different personal and social cognitive power. A Learner who belongs to the different social structure may face the problem during the study at other place but a good leaner easily adapts and adjust environment of the class.

 Growth and development-

Learner’s characteristics are subject to his mental & intellectual growth and development. Education and training are helpful to positive growth and development. A good educationist takes the responsibility to himself of identifying the characteristics of the learner and developing skills into him/her.

 Willingness to learn-

A Learner is always willing to learn and open for information. He has a broad mental space and accepts the changes consistently. Inquisitive nature of learner develops an urge in them for acquiring more and more knowledge from their parents, siblings, neighbours, relatives, teachers, society and many more.

 Interests and attitude of learner

There is a difference between the interest and the attitude of leaner. A teacher always plays an important role to assess the learners for their interest and aptitude so that they can guide according to their aptitude.

 Easily Adjustment to Change-

Although, it is not possible to every learner to adjust in every situation as a different learner has different characteristics of adjustment. Some learner easily adapts classroom environment and some feel uncomfortable in the class environment. So, a good learner should adjust according to the situation.

 Internal Motivation

Motivation is an important factor for a learner to achieve their goals. Learners differ in their capacity of motivation. Some learners are easily motivated while some feel hesitation for a long time before they get motivated by their instructors

 Social-cultural background

Learners come from different culture, area and family background. These learners perform in a homogenous group. Learner takes some time to understand the class environment and adapt. It is very difficult for leaner to adapt, understand and merge the different disciplines in the beginning.

 Learning power

Some learners very quickly understand the questions and solve the problems. If the learners solve the problems easily, it means the understanding level of a learner is high as compared to another person who takes the more time to understand and solve the problems.

 Nervousness

Nervousness is the natural attribute of a learners. If the learner feels nervousness, it means that they have lack of knowledge about the things. It can be removed with the help of teaching learning process.

 Application of mind & Creativity

All Learners have the different approach to their lives. Most of the learners accept what is taught to them but there are have many creative abilities. They have the ability to explore the things and think innovations. Moreover, application of mind is necessary to remain ahead. In society different person have the different profession such as doctor, scientist, innovators and discovers are from the categories of learner who are creative.

A few other important outcomes of learning are also-

- Social-cultural background
- Learning power
- Nervousness
- Application of mind & Creativity
- Learning is a blend of new or old learner
- It is helpful to develop learner as well as society.
- It enhances the purposeful ability of learners.
- It helps the learner in adjusting to his environment.
- It results in a change in behavior of the learner
- Learning is a product of heredity and environment

Learner characteristics which are discussed above in this article indicate that learners have different characteristics which are used to understand the subject matter and crack the exams. A good learner can adjust his/herself according to the situation and achieve their objectives. In the 21st century, Digital sources also act as a significant learning platform. Effectively coordinating along with the group of learner characteristics, provides learners to enjoy a high quality of life and make a good relationship with resilient, international, creative and confident. A good Learner can understand the value of teamwork, the relationship of effort to output and at the same time, knows the need to be regularly learning and growing.

Factors affecting teaching

Its well-known fact and based on various study to examine the direct and indirect effects of factors affecting the learning process or teaching significant evidence was provided that the learning process and teaching is affected both by direct and indirect variable. Not only this teaching process also gets impacted based on 'individual's characteristics' of learner and teacher along with the environmental factors that influence their integration in the class room. Learning is the one of most important factor that brings changes in the behavior of the learner…but there is some factor which influences the acquisition of knowledge provided by teachers. These factors are broadly divided into three areas –

- **Learners Psychological /Individual Characteristic**
- **Teachers & Class room supports**
- **Environment and other surrounding factors**

Factors affecting teaching

Teacher

Teacher – Teacher plays and important role in the teaching-learning process as facilitator of learning. By adopting the best teaching techniques and efficient methods a teacher could explore the right talent of the learners to help them towards quality learning process.

It depends on the various factors of teacher-

1. **Educational Qualification** – Learning of different subjects and area can provide highly valued instruction which can effect than one who with only general degree. If you compare the teacher who has M.ED or PhD you will be able to identify the different ways of thinking and imparting knowledge to students.
2. **Skills –** 'Teaching Talent' is different psychology. One who has higher degree can't assure he has right instinct and can teach in better way than others. Teaching skill is all about you connect with students; it depends on the method of teaching you apply, your way of explanation and engagement with students in the class room. Teacher need to have mastery of following skill –
    a. Communication skills for better involvement and engagement
    b. Use of teaching aids effectively
    c. Selection of teaching method appropriately
    d. Passion for teaching
    e. Human relation skills to act as best guide or mentor

3. **Experience** – its well-known fact that it's easy to become teacher after fulfilling the criteria but they actually become 'Master' with their experience. High Qualification may give teachers edge in terms of understanding the different topics or complex formula but it's the experience in the classroom which helps you to learn and employ better methods to effect learning of students. This is also required to handle different mindset of different students in the class-room.
4. **Subject matter –** Many time teachers has been assigned a subject in which he is not specialized and he himself not in better position to help learners in effective way …so the passion towards the subject and SME is also key factor that impact learning of students. For example, this is very rare chance that Arts Teacher can give good learning experience in subjects related to science.

Learner

Learner – Learning is most effective when the differences in learner's language, cultural and social behaviors are taken into account, its necessary to take note of intelligence, ethnic group, race, belief and socioeconomic status of the learners which can influence the teaching in the class room. Every individual is different with others in the terms of physical, social and cultural orientation; these aspects make learner different from one another.

Also it depends on the interest of the learner including the aptitude, attitude, motivation, mental health and aspiration towards the goals of life.
In short – Psychological difference of learns plays important role in the terms of ability to learns things in the class room.

Environment

Environment and other factors –

1. Support materials – Teacher Support system is set of tools that will improve student's achievement by improving the capacity of teachers. Different teaching Aid and Support System influences the way decision are made and information is passed to students. Its help to analyze the area in which students are under performing. This also helps teachers to gain new skill to increase student learning by use of effective strategies. This is vast area which included many sub section to be worked upon by teacher to improve overall learning process through effective use of tools, assessment methods and professional development.
    a. Student assessments and scores
    b. Teaching Strategies and lesson plans

c. Standards and benchmark
d. Effective use of traditional, modern and ICT based tools

2. Instructional facilities- Teaching Aids – Teaching aids are an integral component in any classroom. The many benefits of teaching aids include helping learners improve reading comprehension skills, illustrating or reinforcing a skill or concept, differentiating instruction and relieving anxiety or boredom by presenting information in a new and exciting way.
3. Learning environment
    a. Class-room environments – Class room environment plays important role in learning process and it effects both teacher and learner. While this is to be maintained by both by teacher and students. For active participation in education, concentration of students is required. Teacher need to focus of behavior of students along with other factors to improve the class-room environment so that students listen teachers' voice while interacting with students.
    b. Socio-economic factor – Economic and social background of teacher and students also affect learning curve. It has direct and indirect effects on thinking level of students and teacher both. Various study of teaching has pointed poor and rich student classify economically and these factor has influence on their learning speed. On other side if teacher is less paid in terms of salary this also impact his thinking level and ways of teaching in the classroom.
    c. Expectations – Every parents have some sort of expectation with his ward in terms of what and where they want to see their children. This has psychological impact on students causing stress and impairments. It often seen that if student is not able to perform mentally it create depression and sometime leads to life failure. That's the reason parent's involvement in the learning process in important to ease out burden on students and helping them to improve learning as overall.

4. Institution – Teacher is abiding by administrative policy of the institution effecting the learning process. There are chances that Teacher want to deliver in a way he loves to do but the institute policy don't allow him to use his own method. This leads to dissatisfaction in teacher causing learning process to slow down. It should not be the case that teacher should allow the way they want but effective planning of lesson and consultation to improve learning path is required in line with the institute policy.

Micro Teaching –

Micro-teaching is a product of research at Stanford University. It was first adopted in 1961 by Dwight W. Allen and his co-workers. It implies micro-element that systematically attempts to simplify the complexities of the teaching process.

Teaching is a complex process. It cannot be mastered in a rigid and general setting. So it is analyzed into well-defined components that can be practiced, taught and evaluated. Micro-teaching concentrates on specific teaching behaviors and provides opportunity for practicing teaching under controlled conditions. So through micro-teaching, the behavior of the teacher and pupil is modified and the teaching-learning process is more effective by the skill training.

Conclusion –

There are multiple scholarly articles available for factors affecting teaching which talks on the various key issues such as teacher student relationship, socioeconomic conditions, school's policy, motivation and other. This includes parent's expectation. So over all multiple factors participate in learning process to slow it down.

Teaching Methodology- Different Types of Teaching Methods

Introduction on Teaching Methodology

Teaching and learning are the two sides of a coin. The most accepted criterion for measuring good teaching is the amount of student learning that occurs. There are consistently high correlations between students' ratings of the "amount learned" in the course and their overall ratings of the teacher and the course.

There are different types of teaching methods which can be categorized into four broad types.

1. *Teacher-centred methods,*
2. *Learner-centred methods,*
3. *Content-focused methods; and*
4. *Interactive/participative methods.*

#1 Instructor/Teacher Centred Methods

Here the teacher casts himself/herself in the role of being a master of the subject matter. The teacher is looked upon by the learners as an expert or an authority. Learners, on the other hand, are presumed to be passive and copious recipients of knowledge from the teacher. Examples of such methods are expository or lecture methods – which require little or no involvement of learners in the teaching process. It is also for this lack of involvement of the learners in what they are taught, that such methods are called "closed-ended".

#2 Learner-Centred Methods

In learner-centred methods, the teacher/instructor is both a teacher and a learner at the same time. In the words of Lawrence Stenhouse, the teacher plays a dual role as a learner as well "so that in his classroom extends rather than constricts his intellectual horizons".

The teacher also learns new things every day which he/she didn't know in the process of teaching. The teacher "becomes a resource rather than an authority". Examples of learner-centred methods are discussion method, discovery or inquiry-based approach and the Hill's model of learning through discussion (LTD).

#3 Content-Focused Methods

In this category of methods, both the teacher and the learners have to _t into the content that is taught. Generally, this means the information and skills to be taught are regarded as sacrosanct or very important.

A lot of emphases is laid on the clarity and careful analyses of content. Both the teacher and the learners cannot alter or become critical of anything to do with the content. An example of a method which subordinates the interests of the teacher and learners to the content is the programmed learning approach.

#4 Interactive/Participative Methods

This fourth category borrows a bit from the three other methods without necessarily laying emphasis unduly on either the learner, content or teacher. These methods are driven by the situational analysis of what is the most appropriate thing for us to learn/do now given the situation of learners and the teacher. They require a participatory understanding of varied domains and factors.

Details of Various Methods with Advantages & Disadvantages

1. THE LECTURE METHOD

A formal or semi-formal discourse in which the instructor presents a series of events, facts, or principles, explores a problem or explains relationships.

- It creates new ideas.
- It is good for a large class
- The teacher is experienced and has mastery on the subject, explain all points and can answer all questions raised by students.
- Students can ask if they need any clarification.
- Learn through listening
- The teacher explains all the points.
- Students give their input
- Teacher discusses the whole topic in the class in easy language students can easily understand the topic.
- It is good for a large class.
- The teacher provides all knowledge related to the topic.
- Time-saving as a teacher is supposed to finish the lecture on time.
- Students give their views at the end of the lecture.
- Students can ask the question if they have any problem to understand the lecture.
- Students attentively listen to a lecture and take notes as the teacher ask questions at the end of the lecture.
- Students know and understand basic concepts.
- The teacher knows all the students so he/she can use suitable strategies for the class to make them understand.
- The teacher is experienced and has mastery on a subject and can answer all questions by students.
- Teacher share information with students so it creates interest in students.
- Students are more involved and participate when teacher ask the question.
- The teacher provides notes.
- Students easily understand every point.
- Students share knowledge with the teacher.
- The teacher is a role model for students.

Uses

- To orient students.
- To introduce a subject.
- To give directions on procedures.
- To present basic material.
- To introduce a demonstration, discussion, or performance.
- To illustrate the application of rules, principles, or concepts.
- To review, clarify, emphasise or summarise.

ADVANTAGES

- Saves time.
- Permits flexibility.
- Requires less rigid space requirement.
- Permits adaptability.
- Permits versatility.
- Permits better centre over contact and sequence.

DISADVANTAGES

- Involves one-way communication.
- Poses problems in skill teaching.
- Encourages student passiveness.
- Poses difficulty in gauging student reaction.
- Require highly skilled instructors.

2. THE DISCUSSION METHOD

- A method in which group discussion techniques are used to reach instructional objectives.
- Students listen to other's opinion & express
- Discuss with teachers the points that were
- Students learn on their own & find out key p
- Students exchange their ideas.
- Students get point of view of all and not on
- After discussion when students give their p teacher corrects their mistakes.
- Students can make their own notes.
- The learning is more effective.
- They don't have to rely on rote learning.
- Develops creativity among students.
- It evokes thinking among students.
- Students have time for preparation of topic.
- Students should have material and knowledge be discussion. Suggestion
- Only those students participate who have con□de
- Concepts become clear after discussion.
- Every student gives his/ her opinion.

USES

- To develop imaginative solutions to problem
- To stimulate thinking and interest and to se
- To emphasise main teaching points.
- To supplement lectures, reading & laboratory exercises.
- To determine how well the student understands concepts and principle
- To prepare students for application of the theory of procedure.
- To summarise, clarify points or review.

ADVANTAGES

- Increase students interest
- Increases students acceptance and
- Utilises student knowledge and experience.
- Results in more permanent learning because high degree of student participation

DISADVANTAGES

- Require highly skilled instructor.
- Requires preparation by the student.
- Limits content.
- Consumes time.
- Restricts the size of groups.

3. THE PROGRAMMED INSTRUCTION METHOD A method of self-instruction

- To provide remedial instruction.
- To provide make-up instruction for late arrivals, absentees, or translents.
- To maintain previously learned skills which are not performed frequently enough.
- To provide retraining on equipment and procedures which have become obsolete.
- To upgrade production.
- To accelerate capable students
- To provide enough common background among students.
- To provide the review and practice of knowledge and skills

USES/ADVANTAGES

- Reduce failure rate.
- Improves end-of-course proficiency.
- Saves time.
- Provides for self-instruction.

DISADVANTAGES

- Require local or commercial preparation.
- Requires lengthy programmer training.
- Increases expenses.
- Requires considerable lead time.

5. THE STUDY ASSIGNMENT METHOD

A method in which the instructor assigns reading to books, periodicals, project or research papers or exercises for the practice.

- To orient students to a topic prior to classroom or Laboratory work.
- It enhances the ability of research on any topic as the student's search topic from different books, webs
- Active learning
- To set the stage for a lecture demonstration or discussion.

- To provide for or capitalise on individual differences in ability, background, or experience through difference
- To provide for the review of material covered in class or to give practice.
- To provide enrichment material.

USES/ADVANTAGES

- Increase coverage of material.
- Reduce classroom time.
- Permits individual attention.

DISADVANTAGES

- Require careful planning and follow up.
- Poses an evaluation problem.
- Produce non-standard results.

6. THE TUTORIAL METHOD

A method of instruction in which an instructor works directly with an individual student.

To reach highly complicated skills operations or operations involving danger or expensive equipment.

To provide individualized remedial assistance

USES/ADVANTAGES

- Permits adaptive instruction.
- Stimulates active participation.
- Promotes safety.

DISADVANTAGES

- Requires a highly competent
- instructor.
- Demands time and money.

7. THE SEMINAR METHOD

A tutorial arrangement involving the instructor and groups, rather than instructor

- To provide general guidance for a group working on an advanced study or research project.
- To exchange information on techniques and approaches being explored by members of a study or research group.
- To develop new and imaginative solutions to problems under study by the group.

USES/ADVANTAGES

- Provides motivation and report.
- Stimulates active participation.
- Permits adaptive instruction.

DISADVANTAGES

- Requires a highly competent instructor.
- Poses evaluation problems.
- Is more costly than most other methods.

8. THE DEMONSTRATION METHOD

A method of instruction where the instructor by actually performing an operation or doing a job shows the students what to do, how to do it, and through explanations brings out why, where, and when it is done.

- To teach manipulative operations or procedures.
- To teach troubleshooting.
- To illustrate principles.
- To teach operation or functioning of equipment.
- To teach teamwork.
- To set standards of workmanship.
- To teach safety procedures.

USES/ADVANTAGES

- Minimise damage and waste
- Saves time
- Can be presented to large groups.
- Enable learning evaluation

DISADVANTAGES

- Require careful preparation and rehearsal.
- Requires special classroom arrangements.
- Requires tools and equipment.
- Requires more instructors

Details of Few Other Teaching Technique

1. Brainstorming

- More interesting
- More informative
- Gain knowledge
- Learning is effective
- More participation of students
- Students give their opinion
- Active learning
- Creative thinking is encouraged.
- Students think beyond their knowledge.

- Everyone gets the chance to express their thoughts.
- Simple topics can be learnt from different angles.

Roleplay

- Interesting method
- Creative thinking is encouraged.
- Students think beyond their knowledge.
- Students enjoy the situation
- Active learning
- Easy to learn

Case study

- Active learning
- Creative thinking is encouraged.
- Students think beyond their knowledge.

Off-line vs. On-line methods

Differences between Online Learning and Offline Learning

The main difference between online and offline learning is location. With offline learning, participants are required to travel to the training location, typically a lecture hall, college or classroom. With online learning, on the other hand, the training can be conducted from practically anywhere in the world. Participants simply need to log on to the internet from their home, work or even their local coffee shop.

Another difference is the flexibility offered. Online learning usually has a more flexible timescale. As a trainer, you can offer your support via email or through an online chat system. With offline learning, it is typically carried out between office hours and doesn't offer as much flexibility to the learner or the trainer.

What are the benefits of online vs offline learning?

Although online learning has become the preferred method for the majority of learners, it's important not to dismiss the benefits of offline training too.

- With online training courses, you and the course attendees bene□t from a more casual, flexible approach. Being unrestricted in regard to location and times means every learner can benefit from the courses.
- With offline learning, it's easier to ensure attendees are paying attention to the training. Some learners also find it easier to retain the knowledge and skills they've learnt through offline training than they do with online training.
- As there are benefits to both learning options, it makes sense to offer a combined online and offline learning approach as a trainer.

Swayam, Swayamprabha, MOOCs etc.

Study Webs of Active Learning for Young Aspiring Minds (SWAYAM)

- SWAYAM is an indigenous (Made in India) IT Massive Open Online Courses (MOOCs) Platform for providing best quality education that can be accessed by anyone, anytime and anywhere using the IT system.
- The Concept of Massive Open Online Courses (MOOCs) involves online delivery of interactive learning content to large number of people simultaneously. It allows sharing of best quality education with everyone, thereby bringing in equity as far as the quality of education is concerned.
- SWAYAM platform is developed by Ministry of Human Resource Development (MHRD) and All India
- Council for Technical Education (AICTE) with the help of Microsoft. It's ultimately capable of hosting 2000 courses and 80000 hours of learning: covering school, undergraduate, post-graduate, engineering, law and other professional courses.
- All the courses on this platform are interactive, prepared by the best teachers in the country and are available, free of cost to the students in India.
- More than 1,000 specially chosen faculty and teachers from across the Country have participated in preparing these courses.

There are 4 quadrants in the MOOC pedagogy:

- Video tutorials covering a whole course – normally having about 20 hours of instruction in series of lectures, each lecture not exceeding 30 minutes.
- E-Content: reading material that could add to the learning imparted through the video tutorials.
- Self-Assessment: Quizzes/assignments that intersperse the course
- Discussion forum for posting queries

All the courses delivered through SWAYAM are available free of cost to the learners, however students wanting certifications shall be registered, shall be offered a certificate on successful completion of the course, with a little fee.

SWAYAM Prabha: the 32 Educational DTH Channels

The SWAYAM PRABHA is a group of 32 DTH channels devoted to telecasting of high-quality educational programmes on 24X7 basis using the GSAT-15 satellite. Every day, there will be new content for at least (4) hours which would be repeated 5 more times in a day, allowing the students to choose the time of their convenience. The channels are uplinked from BISAG, Gandhinagar.

The contents are provided by NPTEL, IITs, UGC, CEC, IGNOU, NCERT and NIOS. The INFLIBNET Centre maintains the web portal.

The DTH Channels cover: –

1. Curriculum based course contents covering diverse disciplines such as arts, science, commerce, performing arts, social sciences and humanities subjects, engineering, technology, law, medicine, agriculture etc. in higher education domain (all courses would be certification-ready in their detailed offering).

2. School education (9-12 levels) modules; for teacher training as well as teaching and learning aids to children of India to help them understand the subjects better and also help them in better preparedness for competitive examinations for admissions to professional degree programmes.
3. Curricula and courses that can meet the needs of life-long learners or Indian citizens in India and abroad.
4. IIT-PAL – to assist the students in the Classes 11 and 12 aspiring to join IITs by encouraging scientific thinking and conceptual understanding critical to answer the 'tough' questions of JEE Advanced, so that good quality students enter the portals of IITs. The four channels under this would be on Mathematics, Physics, Chemistry and Biology.

Teaching Support System

Meaning of Teaching Support System

In the realm of the teaching-learning process, there is a system that teaches, trains, coaches, guides and instructs teachers on how to maximize academic achievement of students.

This system of tools and resources is called a teaching support system. A teaching support system caters to the teachers with an ultimate goal to improve students' achievement.

In other words, teaching support system is the capacity building of teachers using resources and guides on '*how to teach*'.

A good teaching support system provides teachers with a set of instructional strategies for the standards and skills that students are not proficient in. Along with that, it helps teachers acquire the knowledge and skills to deliver those strategies in the classroom

Why do we need the Teaching Support System?

In present times, life skills are more important than memorizing concepts and theories. This makes it very challenging for the teacher to approach his or her subject merely using traditional methods. Given this scenario, it is important for the teacher to go beyond traditional teaching styles and be more creative and engaging in terms of enhancing students' participation.

Secondly, information is abundantly available over the internet which is accessible to teachers and learners alike. This somewhat reduces the role of teachers as the ultimate source of information, more so in case of middle and higher education. Now, the goal of teachers should also be to keep themselves updated with the trends of technology and information.

Teaching Support System- Traditional and Modern

(i) What are traditional teaching methods?

a. Meaning of Traditional Methods: Traditional teaching approach is 'back to the basics' methodology in teaching. It includes all the conventional methods of teaching that are used in the classroom for knowledge generation. In the □eld of education and epistemology, this can also be called as 'chalk and talk' method. Some of the features of traditional teaching methods are:

- It is a teacher-centred approach, which means that this method sees the teacher as having an indisputable authority over knowledge.
- The focus remains on syllabus completion and evaluation of learners through the traditional examination system.
- The teachers evaluate the learners but there is no benchmark for evaluating teachers.

- Usage of textbooks and blackboard is the norm.
- Class management is all about maintaining discipline.
- There is no emphasis on team-building, collaboration, and so on.
- This is usually lecture-based.

(i) Merits of traditional teaching methods:

- Lecture remains one of the most effective teaching methods when the group of learners is exceptionally huge.
- Traditional teaching methods are easy to use given any group of learners.
- They are economic in terms of money as well as time.
- The teacher has a lot of authority over how the content is delivered and the amount of creativity involved.

(ii) Demerits of traditional teaching methods:

- There is less involvement of learners.
- There is less emphasis on the understanding of concepts.
- Weak learners suffer the most as they don't feel motivated.
- Evaluation of learners based on traditional teaching methods can sometimes be faulty.
- There is less incentive among teachers for reflection.
- They are collaborative and require initiative.
- Knowledge is constructed rather than delivered.
- Modern teaching methods have more scope for creativity, flexibility, and reliability.

(i) Merits of modern teaching methods:

- They are learner-centred techniques.
- More content can be covered in lesser time.
- Modern teaching methods are fun and interactive way of learning.
- There is more scope for using audio-video teaching aids such as documentaries, YouTube videos, online lectures, MOOCs, educational games, educational mobile applications etc.
- It is not a mechanical way of teaching as students, as well as teachers, participate in knowledge construction.
- Modern teaching methods also help in self-evaluation.

(ii) Demerits of modern teaching methods:

- Since teaching becomes more dynamic, teachers need to learn and relearn new skills.
- There is too much reliance on technology which reduces the authority of teachers.
- It requires huge investment of money, time and effort.
- Some modern teaching methods are exclusionary in nature.
- The teacher-student relationship suffers as there is less time to develop bonding with the students.

Which teaching methods are better- Traditional or Modern?

- With digital advancement, it rather appears that traditional teaching methods would become a passé. However, this is not entirely true. A teaching support system helps teachers to build their capacity where both the methods can be used in combination.

- While mobile learning and e-learning are the buzzwords, there is no doubt that they can completely replace traditional ways of teaching. For developing critical thinking, the attitude of reflection and inquiry, lecture and dialogue methods play a significant role. At the same time, to keep pace with the ever-changing world and knowledge about the world, ICTs have played a significant role.
- Teaching support system assists and guides teachers to use the best possible combination of methods to teach topics of relevance.

Meaning of Modern Teaching Methods:

Modern teaching methods are more learner-centred methods used in the classroom (such as peer-assisted learning, brainstorming, group discussion etc.). Modern teaching methods also include ICT enabled learning techniques through the use of computers, overhead projectors, videos, documentaries, whiteboards, etc. ICT enabled learning also incorporates mobile and internet-based learning methods.

- Some of the features of modern teaching methods are:
- Modern teaching methods are student-friendly as they require their active participation.
- Modern teaching methods require good execution and definite goals.
- Today, in the 21st century understanding is more important than ever. That is why it is vital for educators to use methods or techniques in teaching that will enable learners to use their knowledge efficiently to solve problem in their daily lives.
- The rapid growth of Information and Communication Technologies (ICT) has challenged the traditional method of teaching and changed the educational landscape globally. The teaching method is now divided into two different ways of thinking on education, one is traditional and other one is ICT Method.
- Most of the teachers and experts have explored new methods of teaching and believe that modern methods or the ICT method is better than the traditional method of teaching.
- When we talk about teaching methods then our society divides into three groups; one group favors the traditional teaching methods, second group favors modern teaching methods and third group is the one who supports the combination of both for effective teaching.
- In this article I will explain that what are the pros and cons of each teaching support system and how we can integrate both traditional and modern teaching methods for effective teaching.

Traditional teaching methods and support system

- Traditional education, also known as back-to- basics, conventional education or customary education, refers to long-established customs that society traditionally used in schools.
- The back-to-basics traditional education method, also known as ‘chalk & talk method’
- This old fashioned way of teaching was all about the recitation and memorization techniques.
- The traditional role of teaching focuses on the teacher as organizers of learning activity, providers of information and experts of knowledge.
- The teacher carries too much of responsibility for teaching in the classroom to make sure everything they are teaching is understood by the students.
- Teacher is also responsible to control class where the teacher teaches using blackboard, explains concepts, asks students to copy and makes sure that students are paying attention

- This technique of teaching is a one-way _ow of information in which the teacher often continuously talks for an hour or more expecting that when he asks a question, the students will able to reproduce the same thing that he was talking about.
- Every important thing regarding the topic is written on the blackboard and students make important notes from the blackboard. After the lecture is over students revise their notes and try to memories the notes.
- Instruction based on textbooks, lectures and individual written assignments
- The main objective of traditional teaching is to pass the examination.

Merits and demerits of traditional teaching methods

Traditional methods of teaching that are still being adhered to in the schools, It has more interaction between the teacher and student.

Traditional teaching systems helps to build the discipline in the class room

Lack of collaboration and group learning

More emphasis on examinations and results rather than understanding of concepts

Tools used in Traditional Teaching Support System-

- Blackboard
- Textbooks
- Charts
- Images & posters
- Maps & atlas, globes
- Flash cards, _ip cards
- Science lab apparatus, models
- Workbook
- Drawing books
- Dictionary, encyclopedias
- Vedic math tools
- Puzzle books, general knowledge books

Modern and ICT Based teaching methods-

Gone are the days of blackboard and chalk …it all replaced by LCD Projectors & interactive whiteboards in the classroom. When we talk about the modern or ICT based education system it's include full _edged usages of high tech equipment in the educational institutions.

Information and Communication Technology (ICT) in education is the mode of education that use information and communications technology to support, enhance, and optimize the delivery of information.

The Mobile learning (m -learning) as a form of e -learning is a rising trend where the education has outgrown the physical constraints of the classrooms and acquired mobility. Students access information whenever and wherever they want, and institutions that provides such advanced technological terrains is rising in number day by day.

- Use of computers or laptops & Technology-driven classrooms
- Smart interactive boards with help of PowerPoint presentation and interactive videos
- Use of microphones for delivering the lecture in the classroom

- Emphasis on understanding of concepts, Activity-based learning and learning labs
- Digitization in teaching, learning assessment and feedback improves learning process and it also helps
- Integrative and social responsibility and civic engagement.
- Collaborative learning and Problem-based learning is key aspect of Modern Teaching Methods.

Below are few key teaching techniques based on Modern and ICT Based teaching methods.

1. Flipped Classroom – Its allow students to go beyond their normal boundaries and explore the lesson before teacher describe them in class-room.
2. Design Thinking & Creative ideas – This involves real life case to increase the curiosity, analytical skills and creativity.
3. Mind Maps – Use of self-learning tools
4. Gamification – Learn through the play using quizzes and hunt ideas
5. Free online Learning Tools
6. ICT Based Teaching Methods – Virtual Reality, Virtual Labs , Open educational Resources
7. Learning Management system (LMS) & Massive Open Online Courses (MOOCs)

Merits and demerits of modern and ICT based teaching methods-

- Interactivity and collaborative learning process with more interest among the students with the help of interesting group activity
- Lots of audio visual recording and online contents helps the students to understand the subject better and also helps students to memories the concept for longer time
- Modern teaching methods teacher can cover more syllabus in lesser time
- Modern teaching methods can adversely affect the eyes of the students.
- Less integration with teachers

Tools used in Modern & ICT based Support system

- ICT Based Devices – Laptop / Pad / Electronic notebooks, E-reader etc.
- Educational games/ Online Puzzles and quiz's
- Audio Visual Teaching aids
- Flash educational games
- CD/DVD, Projectors
- Interactive white boards
- Various electronic devices to support Games, VR , and LMS

Choice Based Credit System in Higher education

In Indian educational system, evaluation plays a vital role between teaching and learning process. It completes several system of education like the quality control in the education system, in selection or entrance for higher grades.

In the words of Kothari Commission," Evaluation is a continuous process, forms an integral part of the total system of education and is intimately related to educational objectives. It exercises a great influence of the pupil's study habits and the teacher's methods of instruction and thus helps

not only to measure educational achievement but also to improve it. The techniques of evaluation are means of collection evidence about the student's development in desirable directions."
The Ministry of Human Resource and Development of India are in the process for New Educational
Policies to develop and reform the educational system of our country. Several steps are being taken to improve the excellence, efficiency for the Higher Education System like change in the curriculum, change in the education system, etc.
In most institutes for higher education, Semester system or percentage based evaluation system are being followed.
There's a lot of buzz in introducing the Choice Based Credit System (CBCS) in higher education for evaluation purpose

Now, what is Choice Based Credit System?

As already mentioned above, most of the educational institutions follow marks or percentage based evaluation systems which restrict the students to take up the subject or the course of their choice. Our educational system should be □exible that is, the student must get a choice to study his/her course/subject of interest. It can only be possible if the Choice Based Credit System (CBCS) are being introduced.
The CBCS opens up many opportunities and path for the students to learn and explore not only the subject of their choice but beyond which also develops ones individual self. These courses can further be evaluated through grading system, which is considered to be better than the age old marking system. It is better if we introduce and follow the uniform grading system across India which will further help the students to move across institutions within India and across countries.
Not only it will help the students but also the potential employers to assess the performance of the candidates uniformly through evaluation system and Cumulative Grade Point Average (CGPA) based on the student's performance in the examination. One can also check the link below and make out how UGC has made the guidelines which have to be followed.
Source UGC Guideline We must be familiar with the structure and implementation of Choice Based Credit System (CBCS). They are as follows:
The approach should be student centric. That is, the CBCS system will permit the students to choose their choice of courses like inter or intra disciplinary courses, skill based courses, etc. It gives relaxation to students to take up the course even they are from different disciplines like a student can combine Physics with Economics likewise.
The student has the freedom to complete their course from different institutions at different period of time. It can also transfer the points or the credit which the student gets from one institute to other. Hence, if the CBCS system gets implemented it will be good for a student as it provides flexibility and also meet their requirement.

The students get the privilege to choose the subjects of their choice. They are being classified as different groups which allow the students to choose their choice of subjects from each group. UGC has categorized as mentioned below:

1. Core Course – In core course, the student have to compulsory study the core or the main subject to fulfill the requirement of the programme of that particular discipline which he/she is studying. Core courses will be there in every semester.

2. Elective Course – In elective course, the student can choose any paper of his/her choice. It could be :
    a. Discipline Specific Elective Course like it will support the discipline of study with the main subject.

It could provide an extended scope for the student to study further.
It also gives the student the exposure to some other areas.
It also nurtures the student's proficiency/skill on any particular subject.

Generic Elective
Project
Ability Enhancement Courses
Skill Enhancement Course

Foundation Course – there are two types of Foundation courses – Compulsory Foundation and Elective Foundation.

1. Compulsory Foundation course are content based which leads a student for their knowledge improvement. They are compulsory for all disciplines.
2. Elective Foundation course are based upon values which aims at man-making education. Semester system is followed on Choice Based Credit System (CBCS System). Two semesters are conducted in a year were a student's performance gets evaluated and grading are done subject

Various methods are followed for evaluation basis on the suitability of the course which is approved by various legislative bodies.

UGC recommends Letter Grades and Grade Point Systems to be applied in giving the grades under the CBCS System.

a. Letter Grades – It is based upon the allocation of marks which a student gets from his/her course and grades are given basis upon their marks or percentage.
b. Grade Point Systems – Here the marks are converted into grades based upon the _xed period.

Grade and Grade Points

Grade and Grade Points	
Letter Grade	**Letter Grade**
O (Outstanding)	10
A+ (Excellent)	9
A (Very Good)	8
B+ (Good)	7
B (Above Average)	6
C (Average)	5
P (Pass)	4
F (Fail)	0
Ab (Absent)	0

When there are large number of students CBCS system has to be implemented with online system to meet the requirements effectively. It will help the students to choose the subjects and teachers of their choice. But, there should also be restriction that if a student _ts into the eligibility criteri of the institution then only they can choose the subjects of their choice.
Through online system, the teachers would also be able to share their notes, discuss the subjects with their students, take tests, etc.

The online system should be user friendly and easy for the teachers. It should also be able to print the mark sheets as per the institutions requirements.
After the selection of the subjects by the students a time table could be generated which would help the students and the teachers to be aware of their class and subjects.
The online system also helps the teachers in taking attendance of their subjects for each student.
It will decrease the work load in maintaining the register and would be easy to calculate the percentage for each student.
The system should be able to generate report as and when required. It should be programmed as per the institutions requirements like report for student's performance, subject wise report, attendance report, etc.
The system should be able to store past records and data so that it could be easily accessible as and when required. It would also help the institution to evaluate and improve the effectiveness of its system in future.

Computation of SGPA and CGPA

UGC recommends Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA).
We can calculate the SGPA in the following manner:

It is the ratio of the sum of the product of the number of credits with the grade points which a student scored and the sum of the number of credits of all the courses which a student has undergone, ie

SGPA (Si) = (Ci x Gi) / Ci

The CGPA is calculated taking into consideration of all the courses a student undergoes of all the semesters of the programme, ie

CGPA (Ci) = (Ci x Si) / Ci

Abbreviations:
Si-SGPA of the semester
Ci-Total number of credits in that semester
Gi-Grade point scored by the student in the course

The SGPA and CGPA shall be rounded off to 2 decimal points which come out the result of the student.

Illustration of SGPA

Course	Credit	Grade Letter	Grade Point	Credit Point (Credit x Grade)
Course 1	3	A	8	3 x 8 = 24
Course 2	4	B+	7	4 x 7 = 28
Course 3	3	B	6	3 x 6 = 18
Course 4	3	O	10	3 x 10 = 30
Course 5	3	C	5	3 x 5 = 15
Course 6	4	B	4	4 x 4 = 16
	20			130

Thus, SGPA = 130/20 = 6.5

Illustration of CGPA

Semester1	Semester2	Semester3	Semester4	Semester5	Semester6
Credit:20	Credit:22	Credit:25	Credit:26	Credit:26	Credit:25
SGPA:6.9	SGPA: 7.8	SGPA:5.6	SGPA:6.0	SGPA:6.3	SGPA:8.0

Thus CGPA = 20×6.9 + 22×7.8 + 25×5.6 + 26×6.0 + 26×6.3 + 25×8.0/144=6.73