Course Title: CURRICULUM, INSTRUCTION AND EVALUATION

COURSE CODE: 105 Credits - 3

Time Allotted: 48 Hours

MM: 100 (External 75, Internal 25)

Objectives:
After completing this course, the pupil-teachers will be able to:
1. Understand the need and significance of curriculum in education
2. Comprehend the various techniques and methods for transaction of curriculum.
3. Understand and analyse the Instructional Objectives
4. Understand the Instructional process.
5. Explore the basics of the Models of Teaching.
6. Realize the importance of various skills and role of media in Instruction.
7. Acquire and use various skills and competencies.
8. Systematically use the evaluation system in the educational process to bring improvement in the instructions

Course Content:

Unit - I: Curriculum and its transaction (12 hours)
 Channels of Education: Formal, Informal and Non Formal
 Formal Channel of Education: Concept, Philosophy and process of teaching learning in the formal school, Basic Infrastructure.
 Curriculum: Concept, nature and process for development of Curriculum. Concepts of Curriculum Transaction, Instruction and Learning. Relationship between Curriculum, Curriculum Transaction, and Instruction. National Curriculum Framework 2005. Time Table, Curricular and Co-curricular Activities.
 Professional Ethics and Code of Conduct for Teachers in formal school.
 Systems approach to Instruction.
 Instructional Objectives: Concept and need. Bloom's Taxonomy (as revised by Anderson & Krathwohl), Behavioral Objectives (Mager's Approach)
 Instructional Planning: Concept, steps and issues related to Instructional Planning. Teacher as a Planner.
 Models of Teaching: Advance Organizer Model and Concept Attainment Model

Unit - II: Instructional Strategies (12 hours)
o Teacher Controlled Instruction (TCI): Meaning and nature, various methods (lecture, team-teaching, demonstration, teacher based activities), strengths and weaknesses of each method, process / procedure for organizing effective lecture and demonstration, assessment of lecture and demonstration, role of teacher's in TCI.
o Learner Controlled Instruction (LCI): Meaning and nature, self-learning, methods of self-learning (self-instructional print material, Keller's Plan, Programmed

Instruction and Computer Assisted Instruction), organization and assessment of LCI, teacher's role in LCI.
o Group Controlled Instruction (GCI): Meaning and nature, various methods (small

group interaction, co-operative learning approach, role play, field trips, tutorial, project work), organization of GCI, problems in organizing GSI.

Unit - III: Communication in the Classroom (16 hours)

 Skills and Competencies for Effective Instruction

o **Microteaching**: Concept, process and evaluation.

o **Simulation in Teaching**

o **Teaching Skills**: Set Induction, Skill of Explaining, Structuring of Questions, Fluency of questions, Response Management, Stimulus-Variation, Reinforcement, Illustration with Examples, Blackboard Writing, Skill of Closure.

 Managing Instruction: Classroom Management, Principles and Techniques.

 Technology in the teaching - learning process: Concept, ideas and outline the steps to use the technology in the teaching - learning process, especially for: Educational Satellites, Educational Videos/audios, Computers, Internet and Mobile Technology, Interactive White boards and Tablets.

 Instructional Media: Concept and need. Types of Basic Instructional Media: Textbooks, Reference books, Magazines, Journals, Newspapers etc.; their selection and skills related to use them.

 Use of Charts, Models and Graphs in the teaching learning process and skills related to use them.

Unit - IV: Educational Evaluation (8 hours)

 Concepts: Evaluation, Assessment, Measurement and Testing. Need and importance of Evaluation.

 Approaches to Evaluation: Formative, Summative, Diagnostic, Norm Referenced and Criterion Referenced

 Continuous and Comprehensive Evaluation: Concept and aims, Scholastic and Coscholastic Assessment, Formative and Summative Assessment.

 Tools of Evaluation: Observation, Interview, and Self Reporting Techniques

 Characteristics of a Good Tool: Reliability, Validity, Practicability

COURSE CODE 103 CURRICULUM INSTRUCTION AND EVALUATION

COURSE CONTENT

UNIT I : CURRICULUM AND ITS TRANSDUCTION.
TOPIC 1 : CHANNELS OF EDUCATION
FORMAL EDUCATION

Formal education corresponds to a systematic, organized education model, structured and administered according to a given set of laws and norms, presenting a rather rigid curriculum as regards objectives, content and methodology. It is characterized by a contiguous education process which necessarily involves the teacher, the students and the institution. It corresponds to the education process normally adopted by our schools and universities. Formal education institutions are administratively, physically and curricular organized and require from students a minimum classroom attendance. There is a program that teachers and students alike must observe, involving intermediate and final assessments in order to advance students to the next learning stage. It confers degrees and diplomas pursuant to a quite strict set of regulations. The methodology is basically expositive, scarcely relating to the desired behavioral objectives - as a matter of fact, it is but seldom that such targets are operationally established. Assessments are made on a general basis, for administrative purposes and are infrequently used to improve the education process. Their character is, for the most part, punitive, obeying a mono-directional methodology that fails to stimulate students and to provide for their active participation in the process, though in most cases, failures are ascribed to them. The setting-up of a formal education system does not consider the students' standards, values and attitudes that are relevant to the education system which, generally, is not tested or assessed at the level of student acceptance, as well as for efficacy and efficiency. The same methodology - poor, ineffective, scarcely creative - is adopted, whether the universe contains 10, 50 or 200 students. Other institutional resources than the expositive method are seldom employed and, when they are employed, the basic learning principles are disregarded. The subjects are presented in isolated blocks, whether as to content or methodology. Thus, for instance, in the case of Physics, for techno- administrative reasons the subject is divided into theory, laboratory and exercises and, their adequate order and correlation is disregarded. In general, the objectives aimed at the personal growth of students are negligence and, the basic principles of learning fail to be considered in the planning and the performance of education systems. It is not excessive to say that in the case of formal education, for the most part teachers **pretend** to teach; students **pretend** to learn; and, institutions **pretend** to be really catering to the interests of students and of the society.

Thus, generally, formal education cannot disguise its aloofness from the real needs of the students and of the community.

NON-FORMAL EDUCATION

As seen, formal education has a well-defined set of features. Whenever one or more of these is absent, we may safely state that the educational process has acquired non-formal features. Therefore, if a given education system is not prudential most of the time - non-contiguous communication - we may say that it has non-formal education features. Likewise, non-formal education characteristics are found when the adopted strategy does not require student attendance, decreasing the contacts between teacher and student and most activities take place outside the institution - as for instance, home reading and paperwork. Educative processes endowed with flexible curricula and methodology, capable of adapting to the needs and interests of students, for which time is not a pre-established factor but is contingent upon the student's work pace, certainly do not correspond to those comprised by formal education, but fit into the so-called **non-formal education**. Proportionally to the number of formal education factors that are absent from a process, we find several grades of non-formal systems.

These preliminary considerations emphasize the need clearly and objectively to establish the possible basic features of non-formal education. This, however, is not an easy task. As remarked by Ward and collaborators[2], "A comprehensive and standard definition of non-formal education is not yet available in common usage. Perhaps such a definition will not emerge until after much more study of the educational issues and potentialities inherent in the variety of experiences now called non-formal education has been done." As regards the distinction between both educational models, the same authors point out that "the implied and real distinctions between formal and non-formal education should be seen within a systematic and holistic view of education." In the same paper, they remark that education remains relatively undefined because the non-school view of education has merited little interest and responsibility from educational planners. Notwithstanding the above, even a preliminary analysis of the existing non-formal systems reveals the constant presence of two features: (a) - centralization of the process on the student, as to his previously identified needs and possibilities; and, (b) - the immediate usefulness of the education for the student's personal and professional growth. Non-formal education seems better to meet the individual needs of students. According to Ward, et al.[3], a systematic analysis of the main features of non-formal education, diversely from formal schooling, shows that participants are led to non-formal programmes because these offer the expertise that they hope to acquire and the necessary assistance for a better understanding of their own selves and of their world. It is but natural that if the education offered by schools is without value for a student's life and fails to prepare him to deal with daily problems, he will simply refuses to participate in programmes that may finally disappear or, at best, have to be reformulated to gain significance for students. As non-formal education is focused on the student, it perforce presents flexible features as regards the initially established and adopted procedures, objectives and contents. It is therefore quicker to react in face of the changes that may affect the needs of students and of the community.

With basis on these preliminary considerations we may easily conclude that the non-formal label encompasses a wide variety of educational systems endowed with features that either lead them towards or away from the established formal systems. Thus, we might infer the existence of a certain degree of continuity linking the formal and the non-formal education. This view is not limited to a merely academic interest because, as will be seen below, it is an extremely objective and practical one in the search for alternative solutions to educational problems.

Given its scope, non-formal education is comprised of an ample diversity of educational situations, many of which have played a significant role in the renewal of educational systems. We shall now analyze three educative processes, namely: "**correspondence learning**", "**distance learning**" and "**open systems**", which, because of their features fall within the scope of non-formal education.

Correspondence Learning: Correspondence learning is an individualized learning system that allows students to proceed at their own pace, according to their interests. The institutional materials are for the most part printed and are generally prepared by a teacher who has not enough didactic and technical knowledge to prepare top quality educational material. Although a number of correspondence courses currently offer other types of instructional material - audio-tapes and videotapes, kits, etc. - we shall for classification purposes solely consider the printed materials offered by correspondence courses. We shall reserve the name "distance learning" to the courses prepared on a high technical level, by a multidisciplinary team, administered by a relatively large Correspondence course participants are found in all age brackets and economic-social classes. But, which are the main features of correspondence learning? It is a planned and systematized activity, based on the preparation of printed educational materials which are forwarded to students who are physically separated from the teachers who can give but a limited assistance to them. institution, comprising a wide variety of educational materials. Correspondence courses generally establish a bi-directional communication by mail, supported by the teacher who corrects the paperwork, offers guidance and

the requested explanations. A degree may or may not be obtained and there is no pressure - the student's motivation is the basic factor for the program's success. It is not difficult to see that correspondence courses do not incorporate several features of the formal education and are thus classified in the field of non-formal education.

Distance Learning: According to Holmberg[6] "Distance study is learning supported by those teaching methods in which, because of the physical separateness of learners and teachers, the interactive, as well as the preactive phase of teaching is conducted through print, mechanical or electronic devices." Distance learning is based on non-contiguous communication[7], that is, "the learner is at a distance from the teacher for much, most or even all the time during the teaching-learning process". Based on this definition, we may infer that the concept of distance learning is wider than that of correspondence learning, with which it is sometimes confused. Thus, Butts[8] remarks that "the rapid adoption, over the past 10 years, of the phrase 'distance learning' to replace 'correspondence courses' would seem to reflect the incorporation of media other than print (and particularly the medium of broadcasting); the fresh impetus coming from research into individualized learning and self-instructional methods; the broadening of the social base for open learning systems; and the development of courses and qualifications designed specifically to meet the needs of distance learning students." The concept of open learning systems used by Butts is wider than that of distance learning, as below analyzed.

In sum, according to Holmberg[9], the three universally accepted features of distance learning are as follows:

"1. - Typical of the whole distance study is that it is based on **non-contiguous communication**, i.e., the learner is at a distance from the teacher for much, most or even all of the time during the teaching-learning process.

2. - A **pre-produced course, as self-instructional** as possible, printed and/or consisting of presentation brought about by other means than print (audio or video-tapes, radio or TV programmes, etc.) guides the study.

3. - Organized non-contiguous two-way communication is a constitutive element of distance study. It is in most cases principally brought about by assignments for submission for the students to solve and answer and for the tutors to comment on (in writing or on audio-tape), but freer forms of communication also occur."

The organization and administration of distance learning significantly differs from those of formal education. Thus, for instance, no students attend classes at the institution, except for occasional visitors. There are no classrooms; instead there are places where multidisciplinary teams comprised of redactors, authors, audio-visual experts, and so on, plan and compose the materials that will be used. In distance learning we find no " academic semesters". The students may at will discontinue studies whenever he needs or wants to do so. As per Holmberg[10], distance learning is comprised of the following basic activities:

" - the development and technical production of distance study courses;
- the distribution of course materials;
- the non-contiguous two-way communication between students and tutors/counselors; and
- record-keeping." Holmberg also reminds us that, in some case, other activities may be required, as for instance:
" - course certificate
- examination and degrees
- supplementary face-to-face contacts between students and tutors/counselors."

A large experience has been obtained over these years through application of distance study at various levels, for different target populations. Our main concern in this Chapter relates to the use of distance study for higher level education. A well-succeeded example of such use is the Open University.

As pointed out by Oliveira[11], Open Universities are generally based on distance study through one or more communication media, such as radio, TV and the printed press. They mostly formulate the instructional materials used in their courses, for the most part employing a distance tutoring system that contracts teachers to provide the required support to the performance of supplementary activities. The assessment and graduation requirements are not uniform and in some cases, the diplomas are on a par with those issued by regular universities, whereas in others we find that certain restrictions are made with regard to given courses. There are also open universities which are in no way concerned with the validation or equivalence of the offered courses and of their diplomas to those given in the existing formal universities. Open universities need their own organizational structure that differs widely from that of traditional universities. According to Oliveira[11], "The nature of their tasks and the modus operandi of open universities provide a mixture of academic culture and industrial activity", requiring the cooperation of professionals from varied backgrounds to act as redactors, educational planners, professors specializing in the different fields, audio-visual experts, and so on, thus displaying a multidisciplinary character. The materials forwarded to the students, comprising printed texts, audio or videotapes, kits, etc., is usually validated prior to their utilization, so as to ensure a high degree of efficacy and efficiency. Oliveira[11] also notes that "in countries with a shallower academic sedimentation, open universities seldom have their start on an academic basis and this results is their remaining for the most part on the fringes of the educational process" -an extremely significant aspect which will be relevant to the proposal that will be submitted below.

The British Open University may be mentioned as being the most successful among all open universities. As described by Grayson[12], the British Open University founded on 1969 was created in order to remain open to new people, methods and ideas. The traditional matriculation requirements were abolished and efforts were made to attract working students. Approximately 63.000 students enrolled on 1980, and its syllabus includes printed materials, audiotapes, reading, study guides, self-assessments and radio and TV programmes. Tutorial assistance and counseling are available in about 280 study centers throughout Great Britain. We must include here a mention to the high quality level of the produced instructional resources, as well as to the disposition shown by the planners of the British Open University always to remain receptive to non-conventional programmes. The courses encompass six areas, namely: education, mathematics, sciences, social sciences, and technology. Their duration is approximately one year. The success of the British Open University led to the creation of several open universities in France, in Germany and in the United States as from 1971, without even mentioning the several Latin-American efforts in this field. Oliveira[11] mentions the pilot-experiment of the China Open University which is planning to enroll approximately two and a half million students. According to that author, "despite a variety of forms and contexts, Open Universities illustrate the many possibilities for widening the scope of higher level education." As to the expression "Open" he remarks that it may relate to (a) - the moment in which the student enrolls on a course for which the required credits system has been extremely simplified; (b) -the educational process itself, as well as the range of options offered to the students as regards programmes and courses; (c) - the fact that the course is taught at a distance; and (d) - the fact that although not generally providing final degrees, they offer to students the possibility and the required flexibility to stay on or to leave the courses.

Open Systems: The third instance of non-formal education corresponds to **open systems** or **open learning**, which have drifted much farther apart from the features of formal education, creating a

wide, deep rift. As remarked by Butts[8], "open learning systems are defined as those which offer students a measure of flexibility and autonomy, to study the programmes of their choice when and where they wish, and at a pace to suit their circumstances. "The features ascribed to open systems, by this author, necessarily set them up as non-formal education instances, jointly with correspondence learning and distance study. As Butts points outs out, "...distance learning is seen ... as one type of open learning."

As mentioned before, correspondence learning can be deemed a type of distance learning and, as distance learning can be said to be an instance of open systems, we conclude that this latter is in the most widely encompassing class among non-formal education examples.

Some authors also consider rather freely the concept of open education - as synonymous with open systems. As Yalli[13] says, "the idea of openness may be twofold: open as to structures, that is, a rupture of the physical barriers of educative institutions, so as to provide free access to schools; or open as to methodology and learning resources." And, he concludes: "The essential fact about open education is that it does not matter how knowledge is acquired, all means are valid. The open learning system aims at the formation of independent students who have capacity for self-discipline and a high capacity for synthesis and for analysis." This author defines that in an open system, learning is the function of an interaction between the student and the actual world.

INFORMAL EDUCATION

Informal education is quite diverse from formal education and, particularly, from non-formal education, although in certain cases it is capable of maintaining a close relationship with both. It does not correspond to an organized and systematic view of education; informal education does not necessarily include the objectives and subjects usually encompassed by the traditional curricula. It is aimed at students as much as at the public at large and imposes no obligations whatever their nature. There generally being no control over the performed activities, informal education does not of necessity regard the providing of degrees or diplomas; it merely supplements both formal and non-formal education.

Informal education for instance comprises the following activities: (a) - visits to museums or to scientific and other fairs and exhibits, etc.; (b) - listening to radio broadcasting or watching TV programmes on educational or scientific themes; (c) - reading texts on sciences, education, technology, etc. in journals and magazines; (d) - participating in scientific contests, etc.; (e) attending lectures and conferences. There are many instances of situations/activities encompassed by informal education, from those that may take place in the students' homes - such as scientific or didactic games, manipulation of kits, experiments, reading sessions (biographies, scientific news, etc.) - to institutional activities - lectures in institutions, visiting museums, etc.

It is easy to see that the higher the degree of systematization and organization involved in informal education activities, the nearer it will be to non-formal education. This is a relevant fact inasmuch as it suggests the possibility of transition from informal to non-formal. We must ponder that, considered by itself, we cannot generally assert whether an educative action belongs to the formal, to the non-formal or to the informal universe. For instance, a visit to a Science Museum may be an informal education instance if arising from a personal and spontaneous decision by a student, as it is not directly related to his scholastic activities. However, if such a visit is part of an established curriculum, requiring from students a written report and including assessments by the teacher, or tutor, then it will probably be an activity associated to either the formal or to the non-formal education.

TOPIC 2: FORMAL CHANNEL OF EDUCATION: CONCEPT, PHILOSOPHY AND PROCESS OF TEACHING LEARNINGIN THE FORMAL SCHOOL, BASIC INFRASTRUCTURE

Formal education means education or training received from institutions like schools, colleges, or universities. For example, to become a doctor, one should receive formal education.

The issue initially relates with a probable conflict between formal and non-formal education. While the former has been firmly established for quite a while and its traditions are accepted by society, non-formal systems in their most advanced forms are only now emerging. According to Ward, et al..[17], the question is, what to do about them: "Allow them to continue and develop as competitive, alternative systems; repress them; adopt the formal educational institutions for the

non-formal model; or integrate the whole into a broader concept and plan for educational development?"

Considering that success, even when limited, should not be disregarded, in the case of non-formal education it is necessary that formal education should analyze the reasons that led to this success and, if possible, incorporate many of its proposals, structures and programmes. Oliveira[18], suggests that "instead of attracting students to the classroom, universities should be accredited and authorized to offer distance learning as well, establishing, themselves, the equivalence of courses, teaching loads and requisites for enrollment and graduation, should that be the case."

It seems that there's no doubt that no competition should exist between formal and non-formal systems, nor should they be considered conflicting systems. After all, one is not necessarily the antithesis of the other and in the educational universe there is rather more than enough room for both. The analysis above, suggesting the presence of a certain continuity in the transition from formal to non-formal systems, leads to the proposal of an strategy in which **non-formal and informal elements would be gradually incorporated by formal education, so as continuedly to meet the needs of individuals and of the society**. Thus, the existing structures could be used and would little by little adopt and adapt non-formal propositions. It would be a politically and technically feasible strategy, allowing a gradual and painless transition. This would of course require the adoption of a series of measures with view to organize workteams in charge of planing that transition, so as to render it compatible with the reality that prevails within each institution and assist institutions and teachers as regards the required technical-administrative re-structuration and, to organize with basic on multidisciplinary teams the necessary instructional materials.

We shall now present three transitions from the formal to the non-formal model with different degrees of alterations. In the first instance, a formal learning institution detects in some classes an insufficient level of pre-requisites (for instance, the usual knowledge of calculus required from students who want a degree in Physics). In that case, the program that will be developed cannot ignore that fact, as is usually the case with formal models. Instructional materials, of the self-instruction type, previously prepared by a multidisciplinary team - mathematicians, redactors, education psychologists and technologists - will be given to the students for individual utilization (in small groups) whether in the classroom, or not - for instance somewhere else in the campus appropriate for this type of self-instruction work - and, especially, at home. The students will join the Physics class after having acquired the necessary knowledge, as comproved by assessment procedures. It is natural that the development of the original program must be re-structured as regards time, so as to consider the alterations arising from the introduction of non-formal elements into the overall framework. It must be pointed out that the resulting system would not be strictly formal, since it is in an initial stage of transition from formal to non-formal. Let us now consider a second instance in which this transition is deeper, that is, the rupture with formal features is greater. The fact that an university student requires an excessive amount of time to arrive at the campus is detected; a careful study by a multidisciplinary team - let us call it "team for non-formal studies implementation" - suggests, as a basic strategy, that by means of previously prepared instructional materials the program should be restructured so as to enable student to perform part of his or her work at home and only go to the campus when his or her presence should be required to carry-out supplementary work - such as experimental tasks, teamwork, meetings with the faculty for clarifications and required explanations, and son on. Some of these restructurations relating with technical-administrative issues, as for instance control plans, assessments, etc., must also be implemented. In this case, the system approaches

non-formal elements although supported by a formal organization. The third instance submitted to analysis relates to a formal institution which, in the case of certain night-course programmes, has to provide for an extremely heterogeneous population presenting a diversity of pre-requisites, geographically distributed far and wide, coming from places distant from the campus. The required analysis and study of this problem would lead the team for non-formal elements implementation to suggest a more radical transformation of the system to a distance learning model which would be mostly developed at students' homes by means of self-instructional materials and study guides, as well as previously prepared distance control systems. A two-way communication by mail would enable the correction of the students' works and the follow-up of their progress. Phone call communications would be used for additional guidance and clarifications, as would visits to the institution for personal contact between students and professors and to perform some supplementary work, either on week-ends or vacation periods. In this case, the transition from formal to non-formal is more widely encompassing, leading to the creation of a program endowed with non-formal features and supported by an originally formal institution.

The above instances illustrate the three types of transition from formal to non-formal, each of which requiring different efforts and investments. They are part of an initial strategy to be considered for implementation of non-formal programmes. The second strategy would of course correspond to the creation of **non-formal** institutions which, as to their physical, technical and administrative organizations would be specially conceived to offer non-formal courses and also act as a technical support center for the logistics, administration, etc., of formal institutions, with view to a gradual transition to the non-formal model. **Formal education** corresponds to a systematic, organized education model, structured and administered according to a given set of laws and norms, presenting a rather rigid curriculum as regards objectives, content and methodology. It is characterized by a contiguous education process which necessarily involves the teacher, the students and the institution. It corresponds to the education process normally adopted by our schools and universities. Formal education institutions are administratively, physically and curricular organized and require from students a minimum classroom attendance. There is a program that teachers and students alike must observe, involving intermediate and final assessments in order to advance students to the next learning stage. It confers degrees and diplomas pursuant to a quite strict set of regulations. The methodology is basically expositive, scarcely relating to the desired behavioural objectives - as a matter of fact, it is but seldom that such targets are operationally established. Assessments are made on a general basis, for administrative purposes and are infrequently used to improve the education process. Their character is, for the most part, punitive, obeying a mono-directional methodology that fails to stimulate students and to provide for their active participation in the process, though in most cases, failures are ascribed to them. The setting-up of a formal education system does not consider the students' standards, values and attitudes that are relevant to the education system which, generally, is not tested or assessed at the level of student acceptance, as well as for efficacy and efficiency. The same methodology - poor, ineffective, scarcely creative - is adopted, whether the universe contains 10, 50 or 200 students. Other institutional resources than the expositive method are seldom employed and, when they are employed, the basic learning principles are disregarded. The subjects are presented in isolated blocks, whether as to content or methodology. Thus, for instance, in the case of Physics, for techno- administrative reasons the subject is divided into theory, laboratory and exercises and, their adequate order and correlation is disregarded. In general, the objectives aimed at the personal growth of students are negligence and, the basic principles of learning fail to be considered in the planning and the performance of education systems. It is not excessive to say that in the case of formal education, for the most part teachers **pretend** to teach; students **pretend** to learn; and, institutions **pretend** to be really catering to the interests of students and of the society.

Thus, generally, formal education cannot disguise its aloofness from the real needs of the students and of the community.

TOPIC 2 : CURRICULUM: CONCEPT, NATURE AND PROCESS FOR DEVELOPMENT OF CURRICULUM. CONCEPTS OF CURRICULUM TRANSACTION, INSTRUCTION AND LEARNING. RELATIONSHIP BETWEEN CURRICULUM, CURRICULUM TRANSACTION, AND INSTRUCTION. ATIONAL CURRICULUM FRAMEWORK 2005. TIME TABLE, CURRICULAR AND CO-CURRICULAR ACTIVITIES.

MEANING : In formal education, a **curriculum** is the planned interaction of pupils with instructional content, materials, resources, and processes for evaluating the attainment of educational objectives.

ETYMOLOGICALLY : **curriculum** came from the Latin word "Currere" which means *to run/to proceed*, referring to the course of deeds and experiences through which children grow to become mature adults. A curriculum is prescriptive, and is based on a more general syllabus which merely specifies what topics must be understood and to what level to achieve a particular grade or standard. Curriculum has numerous definitions, which can be slightly confusing. In its broadest sense a curriculum may refer to all courses offered at a school. This is particularly true of schools at the university level, where the diversity of a curriculum might be an attractive point to a potential student.
A curriculum may also refer to a defined and prescribed course of studies, which students must fulfill in order to pass a certain level of education. For example, an elementary school might discuss how its curriculum, or its entire sum of lessons and teachings, is designed to improve national testing scores or help students learn the basics. An individual teacher might also refer to his or her curriculum, meaning all the subjects that will be taught during a school year.
On the other hand, a high school might refer to a curriculum as the courses required in order to receive one's diploma. They might also refer to curriculum in exactly the same way as the elementary school, and use curriculum to mean both individual courses needed to pass, and the overall offering of courses, which help prepare a student for life after high school.

Curriculum can be envisaged from different perspectives. What societies envisage as important teaching and learning constitutes the "intended" curriculum. Since it is usually presented in official documents, it may be also called the "written" and/or "official" curriculum. However, at classroom level this intended curriculum may be altered through a range of complex classroom interactions, and what is actually delivered can be considered the "implemented" curriculum. What learners really learn (i.e. what can be assessed and can be demonstrated as learning outcomes/learner competencies) constitutes the "achieved" or "learned" curriculum. In addition, curriculum theory points to a "hidden" curriculum (i.e. the unintended development of personal values and beliefs of learners, teachers and communities; unexpected impact of a curriculum; unforeseen aspects of a learning process). Those who develop the intended curriculum should have all these different dimensions of the curriculum in view. While the "written" curriculum does not exhaust the meaning of curriculum, it is important because it represents the vision of the society. The "written" curriculum should therefore be expressed in comprehensive and user-friendly documents, such as curriculum frameworks; subject curricula/syllabuses, and in relevant and helpful learning materials, such as textbooks; teacher guides; assessment guides.
In some cases, people see the curriculum entirely in terms of the subjects that are taught, and as set out within the set of textbooks, and forget the wider goals of competencies and personal development. This is why a curriculum framework is important. It sets the subjects within this wider context, and

shows how learning experiences within the subjects need to contribute to the attainment of the wider goals.

All these documents and the issues they refer to form a "curriculum system". Given their guiding function for education agents and stakeholders, clear, inspired and motivational curriculum documents and materials play an important role in ensuring education quality. The involvement of stakeholders (including and especially teachers), in the development of the written curriculum is of paramount importance for ensuring ownership and sustainability of curriculum processes.

CONCEPT OF CURRICULUM

The concept of curriculum is as dynamic as the changes that occur in the society. In its narrow sense, curriculum is viewed merely as a listing of subject to be taught in school. In a broader sense, it refers to the total learning experiences of individuals not only in schools but in society as well.

DEFINITIONS OF CURRICULUM

Definition 1: Curriculum is such "permanent" subjects as grammar, reading, logic, rhetoric, mathematics, and the greatest books of the Western world that best embody essential knowledge.

Definition 2: Curriculum is those subjects that are most useful for living in contemporary society.

APPROACHES TO CURRICULUM CONSTRUCTION

Based on the principles of philosophy, sociology and psychology, various approaches to curriculum construction have been developed. In practice the following three approaches are commonly used :

i) Subject-centered approach
ii) Child-centered approach
iii) Life-centered approach

Curriculum
Curriculum and Educational Opportunity

Subject-centered Curriculum

In the subject-centred curriculum, the subjects knowledge occupies the central position.

The purpose of subject-centred curriculum is to transmit to the younger generation that knowledge which is most 'important' to all humankind. The advocates of subject-centered Curriculum believe that the needs of individual an society are best served if the curriculum is based on knowledge that is generalisable to groups or classes of situations. The subject-centered curriculum, thus, consists of an array of knowledge structures from different disciplines such as science, arts and mathematics.

These subjects are treated as distinct entities, each requiring almost equal time for classroom instruction. Knowledge is communicated to students mainly through classroom instruction. It has been pointed out by many educationists that knowledge has grown exponentially during the past fifty years and the number of subjects has also increased. But our school curricula have been static and same subjects are offered in school year without any substantial change. School curriculum have not kept pace with the growth of knowledge.

The debtate still continues as to which knowledge is most important or worth teaching in schools. The restructuring and multiplication of knowledge poses significant change for the curriculum designers. The essential question for curriculum designers is that how many disciplines can be reasonably added to the existing school curriculum? Another question posed by educationists about subject-centered curriculum is that if knoweldge is changing rapidly, then why students should be made to memories content that is likely to change significantly by the time they reach their adult years. To answers to the

first question i.e. How many more subject can be added to existing school curriculum? The curriculum designers have suggested an integrated knowledge perspective and to answer the second question, the process was suggested as content perspective.

Integrated Knowledge Perspective

Integrated Knowledge curriculum presents knowledge in a more holistic manner. An integrated approach to knowledge was seen as a way of avoiding an unreasonable multiplication of the subjects that students have to study. Throughout the twentieth century there have been debates on (i) whether curriculum should approach knowledge as an integrated whole and (ii) if integration is desirable, by what principles it should be achieved. Francis Parker believed that knowledge as naturally encountered by the child in daily life should serve as the basis for integration. Two different designs of integrated knowledge curriculum are the correlation curriculum and the broad-fields curriculum. The correlated curriculum would leave the traditional subjects intact but would articulate their contents to emphasize a set of commonalities. The purpose of this approach is to decrease the fragmentation of learning that arises from compartmental subjects. Subjects are not modified in any way, they are simply arranged so that linkages become obvious. The broad-fields curriculum encompasses several related but specialised subjects. For example, a course in general science can draw content from physics, chemistry, botany, zoology and geology.

The Process as Content Perspective

This perspective of curriculum is a dynamic representation of how scholars actually engage in their inquiry activities. The students do not focus on learning facts, but on learning basic concepts and principles that will be used in the process of discovering/ producing knowledge. The process as content perspective was especially popular during 1960s and early 1970s, when Bruner introduced the concept of process learning in his book entitled. ''The Process of Education". According to Bruner, intellectual activity is same whether a third grade students is solving a problem or a scientist is discovering a solution to a problem. A critic uses the same processes in reading a poem as nay one else. The difference is of degree and not of kind. The idea of discovery learning involving the processes of inquiry had wide-spread appeal. Parker and Rubin maintained that school curriculum should provide students with basic processes through which one acquires knowledge. The discovery approach appears to be useful for integration of various scientific disciplines especially in the earlier grades, by introducing children first to "the most fundamental understanding that can be achieved of the underlying principles that give structure to that subject". Bruner conceptualized children as little adults who could emulate adult scientists.

Child-centered Curriculum

Child-centered curriculum considers children as individuals who learn differently from adults. In such a curriculum the characteristics of the child dominate the curriculum. The child-centered curriculum perspective was accepted and propagated by John Dewey, Rousseau, and Parker, although they all have different perspectives of childhood. Under the Rousseaurian perspective of childhood, each child has innate goodness and the aim of education is to develop the child's innate goodness and to protect him/ her vices and errors of adults. During early years, children should be allowed free play in natural settings.

Between the ages of five and twelve, sensory and concrete experiences should dominate their learning. Abstract subjects such as geography and history should be abolished from the primary stage curriculum. Only after the twelfth year children should be introduced to abstract learning. An existentialist perspective of childhood is fundamentally different form the Roussearurian perspective. In Roussearurian perspective, the aim of education is to protect the child from the degeneration of adulthood. Under the existentialist perspective, children must find their own way toward a meaningful life and must also define the parameters of quality life in the highly individualistic terms of "self".

The purpose of education is to foster the knowledge of self, the ability and sensitivity to express one's innermost consciousness and personal skills of valuing and choice-making. The arts, drama an music as vehicles of self-expression and development, along with sensitivity training should be included in the child-centered curriculum. Both subjective and objective knowledge are important if the individual is ultimately to take responsibility of self. Under the existential concept, the teacher follows a set of very broad goals that on the whole encourage children to develop in their own way, while under the Rousseaurian conception, the teacher has to provide opportunities for learning but the child is to learn without the benefit of the teacher's direct intervention. Francis Parker, Pestalozzi and Froebel considered the child-in-society perspective of childhood. They believed in the child's active involvement in real world experience as the means of learning. Parker crusaded against "unnatural teaching methods" and "isolated subject matter learning". He believed that learning must follow natural way in which the child experience the life and constructs the knowledge of the world around. For example, geography should be learnt through field trips or by sketching different kinds of landscape, rather then by reading and memorizing a textbook. Instead of emphasizing the study of grammer, writing and conversation about children's everyday activities should be stressed as the primary vehicle of language instruction. Artificial divisions among the subjects should be ignored for the sake of holistic learning and experience. John Dewey was of the view that children learn by interacting with elders and they learn to act in acceptable and even praiseworthy ways because they naturally seek approval. As societies grow more complex, children need more formal education to master the complexities of living. Education brings meaning to the experiences of children. According to Dewey, ''Education is reconstruction or regoranisation of experiences which adds meaning to the experiences of children and increases their ability to direct the course of subsequent experience".

Life-cantered Curriculum

The International Commission on Education (1999) emphasized on the concept of lifelong learning. Education throughout life is based on four major principles or pillars:

Curriculum

Curriculum and Educational

Opportunity

i) Learning to know;
ii) Learning to do;
iii) Learning to be; and
iv) Learning to live together

Learning to Know

We should lay stress on combining a sufficiently broad general education with the opportunity of working at depth on a number of selected subject. Such a broad general education will develop essential skills and become a means of learning to learn any lay the foundations for learning throughout life.

Learning to Do

Students should be provided opportunity to work on various work experience schemes or social work while they are still receiving education. Education should help in developing such abilities and competencies which would enable students to deal with a variety of situations. Importance should be given to team work and to methods of combining study with work.

Learning to Be

The aim of education is to develop the potential and talents hidden in every person.

These include memory, reasoning power, imagination, physical ability, aesthetic sense, aptitude to communicate with each other and the natural charisma of group leadership. The emphasis here is on self-knowledge and development of personality.

Learning to Live Together

The Commission put greater emphasis on 'Learning to live together', and has described it as "the foundation of education". By developing an understanding of others and also of their own history, tradition and spiritual values; by analyzing challenges of the future and by recognising our growing interdependence, a new spirit for a peaceful world order can be created.

CURRICULUM CONSTRUCTION

Curriculum construction: a model

The model presented by Zais (1 976) pertains to curriculum construction, which concerns decision making in the areas of

i) curriculum foundations; and

ii) curriculum components.

ThE Field of Curriculum

Under the theories of construction we essentially talk about curriculum designs of which, the major ones are:

i) Subject-centered designs,

ii) Learner-centered designs, and

iii) Problem-centered designs.

Each of these designs has its own advantages and disadvantages, and one may favor one or the other, depending on what the 'foundations' suggest. In the context of open distance education, we think that the approach has to be eclectic as the expectations of both the policy makers and the consumers of that policy happen to be very diverse-education for remote areas, disadvantaged groups, professionals, lifelong education, disciplines, social mobility etc. In order to satisfy such diverse demands, an open distance institution has to follow an eclectic approach to course design. The implication is that depending on the nature of a particular course that needs to be prepared by such an institution, the choice could be any of the above mentioned three designs, i.e., subject-centered,
learner-centered or problem-centered, individually or in any combination.
Let us briefly touch upon them in the given order.

Subject-centered design

In subject-centred designs, the content is given more importance and weight age, and it is the content which forms the basis for both vertical and the horizontal structure of the curriculum. In such designs, significant curricular components like aims, learning activities, etc., are lost sight of. In the main, such a design emphasises content coverage, and consequently encourages memorization and the acquisition of information. This design provides an easy approach to building a course, and then it is easy to administer such a design, but it pays little attention to learners' needs, experiences and background.

Learner-centered design

Learner-centered designs have as their basis the individual learners and their needs, background and experiences. Under this design, the curriculum evolves as the teacher and learner work together on the learning tasks. Obviously, the design can lead to countless variations.
One of them, for example, is based on the 'experience' of learners. The
Experience design is characterized by the following features:

i) learners' own interest and needs are identified to shape the
curriculum;

ii) planning and activities are the joint responsibility of teachers and
learners; and

iii) the approach usually follows problem-solving procedures.

Problem-centred designs

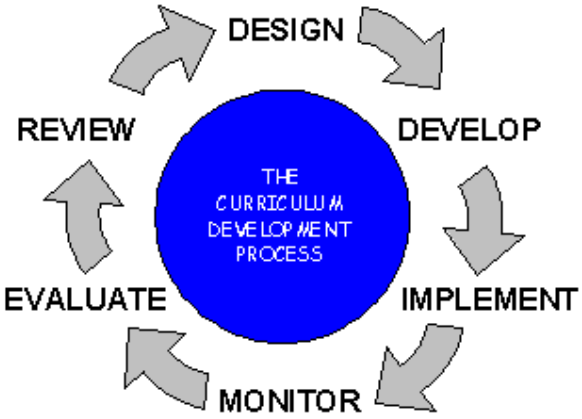
Problem-centred designs focus on the issues of actual life, individuals and society. Unlike the learner-centred designs, the problems are preplanned, and yet they cater to learner' needs and experiences. As such, they focus on both the content and the needs and experiences of learners.

Very often this design takes the form of a core-cum-specific needs model, in which 'core' takes care of the basic content and then 'specific needs' are catered to with the help of need-based courses used as complements to the 'core' component.

Having acquainted ourselves with the theories of curriculum construction, we shall now discuss the theories of curriculum development.

The Curriculum Development Process

In a broad sense, the curriculum development process includes the design, development, implementation and evaluation of curricula. However, as one examines the process more closely it becomes evident that each component may itself comprise several varied but inter-related activities. The Curriculum Development is charged with the responsibility to operationalise the Curriculum Development Process. Accordingly, the work of the division may be more adequately described as designing, developing, implementing, monitoring, evaluating and reviewing curricula that are appropriate and relevant to the needs and interests of a developing nation, such as ours.



The Curriculum Development Process

The following is a brief description of these various activities involved in the development of curriculum materials:

Design: This involves all the preliminary work that is carried out to ensure that the curriculum is relevant, appropriate and workable. At this stage, the curriculum is conceptualized and attention is paid to arrangement of the varied components. Considerations include the focus on the philosophical underpinnings, goals, objectives, subject matter, learning experiences and evaluation ; all established in consultation with stakeholders. At present, emphasis is being placed on the learner in curriculum development activities.

Develop: In this stage, curriculum development involves planning, construction and the logical step-by-step procedures used to produce written documents, as well as print and non-print resource materials. These documents may include vision statements, goals, standards, performance benchmarks, learning activities and instructional strategies, interdisciplinary connections, and other integration activities that guide curriculum implementation.

Implement: This is the stage in which all stakeholders become part of the process by making their contribution to operationalise the curriculum as designed and developed. The process is managed by the officers of the Curriculum Development Division. It requires interaction between officers of the division, principals, teachers, parents, students and the general public, all key in the education of the child. Since implementation is a change actvity, the Curriculum Development Division also engages in in-service teacher education through seminars and workshops to facilitate the required alteration of individuals' knowledge, skills and attitude

Monitor: This can be seen as part of the implementation process. It is at this stage that officers visit schools to verify that classroom practice is consistent with the established goals and objectives of the national curriculum. Data is gathered to inform policy and decision making relative to the curriculum. The monitoring activities also capture best practices for generalization and develop the working relationship between officers of the Curriculum Division and school personnel, allowing for technical support at the school level to be provided where needed.

Evaluate: At this stage, officers engage in analyzing data collected on the field to determine the effectiveness of the curriculum design and its implementation as they relate to the child. The process entails comprehensive study of the data with the view of identifying possible deficiencies and root causes that can lead to corrective action. It is the findings from this exercise that directly influence the final stage of review.

Review: The information gained from data analysis is used to guide appropriate adjustments to the curriculum documents. Such adjustments incorporate the strengths and address any apparent weakness of the implemented curriculum. Because of technological developments and the resulting ease with which new information can be shared, continuously evolving curriculum is now possible. Updates, links to resource material and successful teaching and learning experiences can be easily incorporated in curricula. These considerations are all geared towards curriculum improvement and improved student performance in meeting national, developmental and educational goals.

CURRICULUM TRANSECTION

Curriculum Transaction is the effective and desired implementation of the curriculum contents on the basis of aims and objectives listed in the curriculum. Curriculum Transaction incorporates effective planning for providing learning experiences for its learners, organization of planning, administration/implementation of the organized planning and evaluation of the implementations by the implementer and the experts in the relevant field.

Effectiveness of curriculum transaction is determined mainly by two factors:
i) The extent to which a teacher transacting the curriculum uses effective learning experience and
ii) The degree to which the teacher effectively uses the resources available for teaching the curriculum.

The teacher should use a variety of teaching methods and should provide rich and diverse learning experiences to suit the needs of all learners. Each individual is unique and has different capacities, interests and needs. Some individuals can learn better through problem solving whereas other learn through drill or recitation. At primary level, recitation method is most commonly used in the classroom. But recitation method gives little opportunity to children to investigate and solve problems. The function of the teacher is primarily that of guiding learners to identify and solve significant problems. But the teachers as in usual practice refer their students to the solutions already given in textbooks. Besides teaching in our schools is usually teacher centred and worse still sometimes textbooks-centred. In certain areas like language and arithmetic, drill pre-dominates all other teaching techniques. Therefore, keeping in mind the objectives of curriculum and diverse and varied interests and capacities of students, teachers should select the appropriate teaching strategies and learning experiences. Together, these should provide for optimum personal development and should promote continuity of experience.

The second important aspect in curriculum transaction is the effective use of resources available. The teacher should make maximum use of resources available in school. The teacher should also be able to mobilize the community resources. Sometimes teachers strictly follow the highly structured curriculum without any deviation or change even under these are called for. The activities given in the textbooks may or may not be appropriate in a particular context. For example, teachers sometimes do not demonstrate
or provide concrete examples because objects mentioned in textbooks are not available in school. If there is no laboratory in school, teachers should design activities making use of the resources available in their school and their immediate environment. The teacher has to be creative and reflective in carrying out innovative experiments and providing meaningful learning experiences. Many activities can be done during play sessions. For example, many concepts of EVS such as force, work, weight, level etc. can be introduced through games. Community resources should also be mobilized and used wherever possible. Community's involvement in school programmes can provide rich learning experiences to students. When teachers are closer to community. they understand community and children better and can provide more relevant learning experiences to children.

TOPIC 3 : PROFESSIONAL ETHICS AND CODE OF CONDUCT FOR TEACHERS IN FORMAL SCHOOL

The difference between the Code of Conduct and the Code of Professional
Ethics needs to be appreciated. As far as the provision of the Right of Children to Free and Compulsory Education Act, 2009 is concerned, particularly with reference to Section 24 of the Act pertaining to duties of teachers, *enforcement of the Code of Conduct is perhaps the answer.* This enforcement is the responsibility of the appointing/disciplinary authority. However, the provisions which define the Code of
Conduct could also be incorporated in the Code of Professional Ethics, as making them ethical provisions will always desist teachers from violation of the Code of Conduct. Like all other professions, the teaching profession should also move towards self regulation, which implies that every teacher should have the inner urge to adhere to the ethical principles listed in the Code of Professional Ethics for teachers. However, in spite of the expectation of the voluntary observance of the Code, some cases of violation of the Code or of partial adherence to it are likely to occur in the vast system of school education. Therefore, a suitable mechanism needs to be evolved to ensure that all members of the profession follow the ethical principles enshrined in the Code.

The violation of the Code of Conduct invites disciplinary action for which detailed rules are prescribed. However, in the case of violation of Code of Professional Ethics by teachers, the responsibility to discipline them should rest with the authorized representatives of the profession. The magnitude or seriousness of the violation may not be the same in all the cases. The cases of violation or non-observance shall have to
be dealt with a T different levels and in different ways in accordance with the nature of
the violation. In other professions, as for instance, medicine, law, etc. after completion of the professional course, the pass-out is registered as a bonafide practitioner of the profession and is bound by a Code of Professional Ethics relevant to his/her profession. In case of any reported violation of the code, the authorized professional body initiates disciplinary action which may even lead to cancellation of the license to practice the profession. No such provision exists in the case of the teaching profession.

To begin with, All India Federations of Primary and Secondary Teachers organizations should formally adopt the 'Code" and resolve to take all possible measures to ensure its observance in letter and spirit. At the time of initial appointment, a teacher should be provided a copy of the 'Code of Professional Ethics' for perusal and should be further required to furnish an 'Oath', before joining the profession that he/she would always strive to observe the 'Code' in letter and spirit.

Mechanism to Deal with Violations
A possible mechanism to deal with non-observance of the Code is suggested here. A four-tier mechanism could be evolved to deal with the violations noticed or reported, as outlined below:-

(i) School / Block Ethics Committee
In the case of bigger secondary or higher secondary schools where the number of teachers is quite sizeable, an Ethics Committee at the school level comprising senior members of the staff should be appointed. In the case of Primary/Elementary schools, keeping in view the fewer numbers of teachers, the Ethics Committee could be
constituted at the Block or Cluster level by the concerned Associations of teachers. The Committee may deal with the complaints regarding punctuality, regularity, completion of curriculum, engagement in private tuitions, etc. and, in the first instance, should try to persuade the erring teachers to mend their ways.
The Teachers Associations and Ethics Committees should make it clear to the teachers that if they do not mend their ways, the Association would not support them if disciplinary proceedings are initiated against them by the authorities.

(ii) District Ethics Committee
The recognized Teacher Organizations/Associations in the State shall jointly constitute the Ethics Committee at the district level comprising representatives of teachers and eminent educationists. The Committee should deal with complaints referred to it by the School/Block Ethics Committee, where the teachers have failed to
improve their conduct in spite of the efforts made by the School/Block Ethics Committee. This Committee should deal with complaints of serious nature such as violation of Constitutional Provisions, cases of child abuse, spreading feelings of hatred or enmity among different communities, etc. The Committee may issue 'Advisories' to the erring teachers, if necessary. In the case of recurrence of violation of the Code, the District Committee shall refer the matter to the State Committee for appropriate action.

(iii) State Ethics Committee

The recognized Teacher Organizations in the state shall jointly appoint an Ethics Committee comprising eminent educationists, representatives of teacher organizations and parents. The Committee should deal with complaints referred to it by the District Committees. The Committee may debar the erring teachers from contesting elections for various offices in the concerned Teacher Organization or suspend their membership.

(iv) National Ethics Committee

At the national level, NCTE and All India Federations of school teachers may jointly appoint a National Ethics Committee comprising eminent educationists, representatives of Federations of Elementary and Secondary Teacher Organizations, National Commission for the Protection of Child Rights (NCPCR) and parents. The
Committee should be responsible for consideration of issues which may require periodical review of the code and also for the formulation of guidelines for the functioning of Ethics Committees at different levels.

TOPIC 4.SYSTEMS APPROCH TO INSTRUCTION

This approach entails analysis of problems and synthesis solutions. In the analysis phase, a given situation is examined to identify the forces affecting it. The situation is viewed as a system composed of interconnected parts and related to other systems. For example a classroom may be portrayed as a system in which teachers collaborate with students in the shared construction of meaning in the context of community expectations under the constrains of limited time and resources. Analyses are constructed to determine the sorts of knowledge and skills most useful to students and the order in which these should be learned. In the synthesis phase, modifications in the system (inventions) are designed to overcome forces that interfere with the achievement of the system's goals. In classroom, such modifications generally take the form of instructional programs.

The systems approach is a problem-solving method which helps to:

1. Define the problem as clearly as possible.
2. Analyse the problem and identify alternative solutions.
3. Select from the alternatives and develop the most viable solution mix.
4. Implement and test the solution.
5. Evaluate the effectiveness and worth of the solution

TOPIC 6 : INSTRUCTIONAL OBJECTIVES: CONCEPT AND NEED. BLOOM'S TAXONOMY (AS REVISED BY ANDERSON & KRATHWOHL), BEHAVIORAL OBJECTIVES (MAGER'S APPROACH)

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INSTRUCTIONAL OBJECTIVE: CONCEPT AND NEED

Definition: An instructional objective is a definition of a working task that a worker
Must be competent to do after completing a course of instruction.
The definition includes these critical parts:

- who performs the task,
- task output resulting from worker's expected behaviors,
- observable behaviors while worker is performing the task, and
- task input that the worker requires to perform the task, including
- incentive to perform the task,
- standardsfor customer acceptance of task output,
- data and information beyond procedural actions,
- material resources besides data and information,

- equipment, machines, and tools,
- timeframe, and
- work site.

Instructional Goals and Objectives

Writing Instructional Goals and Objectives

This site will introduce you to instructional goals, the three types of instructional objectives you may need to create to reach your goals, and the best way to write and assess them. **What is an Objective?**

- Objectives are the foundation upon which you can build lessons and assessments that you can prove meet your overall course or lesson goals.
- Think of objectives as tools you use to make sure you reach your goals. They are the arrows you shoot towards your target (goal).

Goals and Objectives

- As you develop a learning object, course, a lesson or a learning activity, you have to determine what you want the students to learn and how you will know that they learned. Learning objectives, also called behavioral objectives or instructional objectives, are a requirements for high-quality development of instruction.
- The purpose of objectives is not to restrict spontaneity or constrain the vision of education in the discipline; but to ensure that learning is focused clearly enough that both students and teacher know what is going on, and so learning can be objectively measured. Different archers have different styles, so do different teachers. Thus, you can shoot your arrows (objectives) many ways. The important thing is that they reach your target (goals) and score that bullseye!

Thus, stating clear course objectives is important because:

- Objectives guide the content materials and the teaching methods.
- You can use objectives to make sure you reach your goals.
- Students will better understand expectations and the link between expectations, teaching and grading.
- Assessment and grading should be based on the objectives.

Types of Objectives

There are three types of objectives:

- Cognitive
- Affective
- Psychomotor

Cognitive Objectives

Cognitive objectives are designed to increase an individual's knowledge. Cognitive objectives relate to understandings, awareness, insights (e.g., "Given a description of a planet, the student will be able to identify that planet, as demonstrated verbally or in writing." or "The student will be able to evaluate the different theories of the origin of the solar system as demonstrated by his/her ability to compare and discuss verbally or in writing the strengths and weaknesses of each theory."). This includes knowledge or information recall, comprehension or conceptual understanding, the ability to apply knowledge, the ability to analyze a situation, the ability to synthesize information from a given situation, the ability to evaluate a given situation, and the ability to create something new.

Affective Objectives

Affective objectives are designed to change an individual's attitude. Affective objectives refer to attitudes, appreciations, and relationships (e.g., "Given the opportunity to work in a team with several people of different races, the student will demonstrate an positive increase in attitude towards non-discrimination of race, as measured by a checklist utilized/completed by non-team members.").

Psychomotor Objectives

Psychomotor objectives are designed to build a physical skill (e.g., "The student will be able to ride a two-wheel bicycle without assistance and without pause as demonstrated in gym class."); actions that demonstrate the fine motor skills such as use of precision instruments or tools, or actions that evidence gross motor skills such as the use of the body in dance or athletic performance.

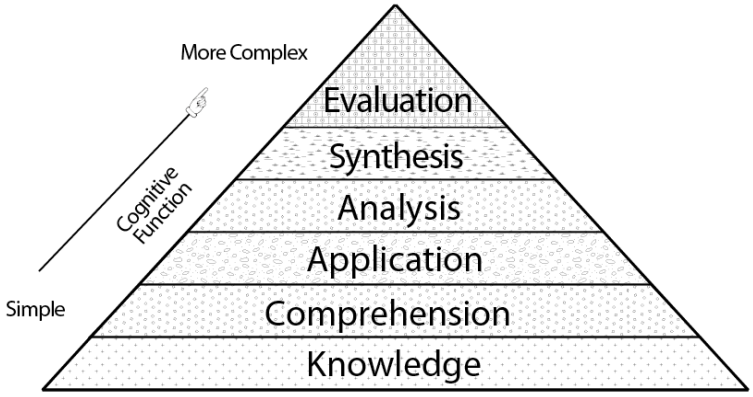
Cognitive Objectives

Cognitive objectives are designed to increase an individual's knowledge. Many refer to Bloom's taxonomy of cognitive objectives, originated by Benjamin Bloom and collaborators in the 1950's.

Examples:

- Given a description of a planet, the student will be able to identify that planet, as demonstrated verbally or in writing.
- The student will be able to evaluate the different theories of the origin of the solar system as demonstrated by his/her ability to compare and discuss verbally or in writing the strengths and weaknesses of each theory.

Bloom describes several categories of cognitive learning.



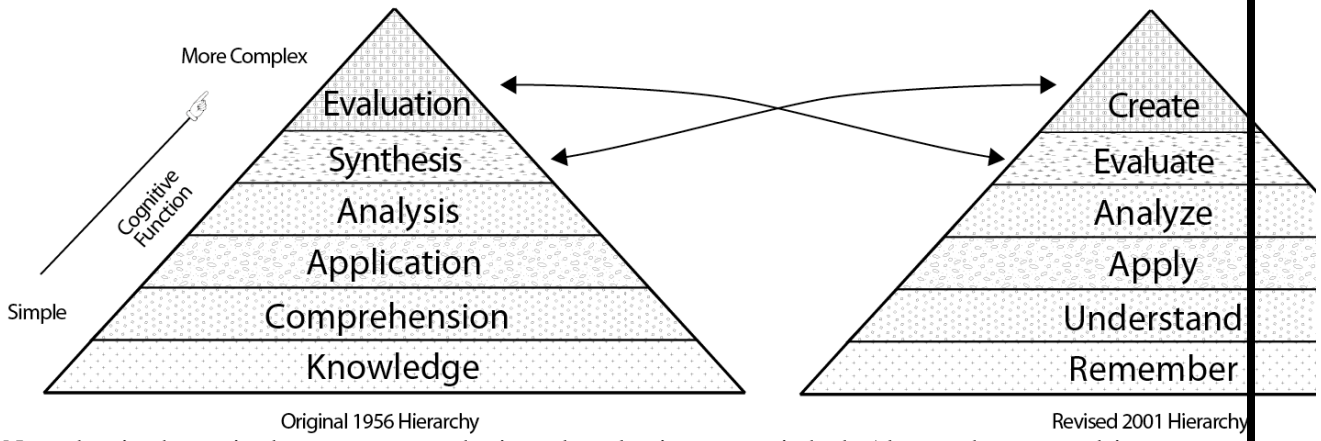
Original 1956 Hierarchy

Starting with basic factual knowledge, the categories progress through comprehension, application, analysis, synthesis, and evaluation.

- Knowledge - Remembering or recalling information.
- Comprehension - The ability to obtain meaning from information.
- Application - The ability to use information.
- Analysis - The ability to break information into parts to understand it better.
- Synthesis - The ability to put materials together to create something new.
- Evaluation - The ability to check, judge, and critique materials.

In the 1990's, Lorin Anderson, a former student of Bloom, along with David Krathwohl, one of Boom's original partners, worked to revise the original taxonomy. The Anderson and Krathwohl Taxonomy was published in 2001 in the book "A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives."

Here is a comparison of the original and revised taxonomies:



Note that in the revised taxonomy, synthesis and evaluation are switched. Also, verbs are used in place of nouns to imply the action one takes in each level.

- Remember - Using memory to recall facts and definitions.
- Understand - Constructing meaning from information.
- Apply - Using procedures to carry out a task.
- Analyze - Breaking materials into parts to determine structures and relationships.
- Evaluate - Making jugements based on checking against given criteria.
- Create - Putting materials together to form a unique product.

Whichever taxonomy you prefer, there are key verbs for each level you can use when writing cognitive objectives.

Additional Links

- Major Categories in the Taxonomy of Learning Objectives
- Bloom's Taxonomy (University of Georgia)
- Bloom's Taxonomy of the Cognitive Domain
- Learning Objective Verbs for Specific Disciplines
- Beyond Bloom - A New Version of the Cognitive Taxonomy

Offline References

Anderson, L.W., &Krathwohl (Eds.). (2001). *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. New York: Longman.

Bloom, B.S. and Krathwohl, D. R. (1956). *Taxonomy of Educational Objectives: The Classification of Educational Goals, by a committee of college and university examiners. Handbook I: Cognitive Domain*. NY, NY: Longmans, Green.

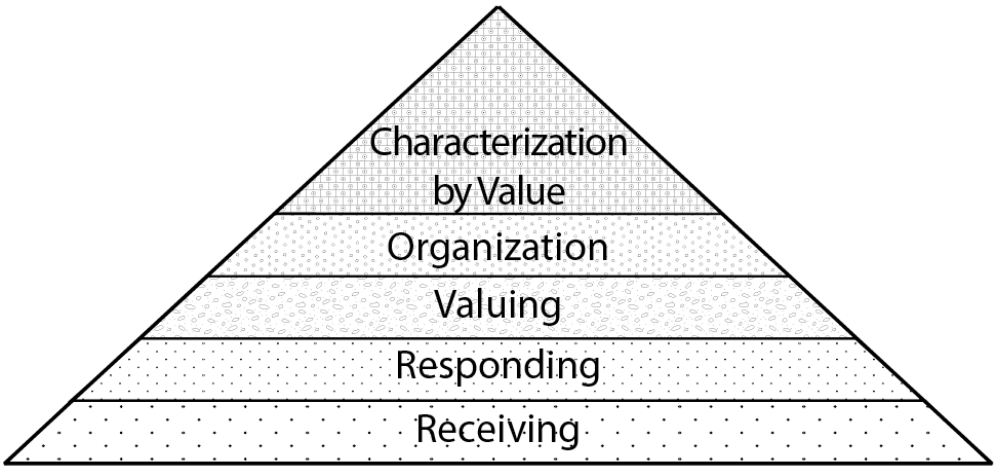
Affective Objectives

Affective objectives are designed to change an individual's attitude, choices, and relationships.

Example:

- Given the opportunity to work in a team with several people of different races, the student will demonstrate a positive increase in attitude towards non-discrimination of race, as measured by a checklist utilized/completed by non-team members.

Krathwohl and Bloom created a taxonomy for the affective domain that lists levels of commitment (indicating affect) from lowest to highest.



Affective Domain

The levels are described as follows:

Affective Domain Hierarchy		
Level	**Definition**	**Example**
Receiving	Being aware of or attending to something in the environment.	Individual reads a book passage about civil rights.
Responding	Showing some new behaviors as a result of experience.	Individual answers questions about the book, reads another book by the same author, another book about civil rights, etc.
Valuing	Showing some definite involvement or commitment.	The individual demonstrates this by voluntarily attending a lecture on civil rights.
Organization	Integrating a new value into one's general set of values, giving it some ranking among one's general priorities.	The individual arranges a civil rights rally.
Characterization by Value	Acting consistently with the new value.	The individual is firmly committed to the value, perhaps becoming a civil rights leader.

Here are key verbs for each level you can use when writing affective objectives:

Key Verbs for the Affective Domain				
Receiving	**Responding**	**Valuing**	**Organization**	**Characterization**
• accept • attend • develop • recognize	• complete • comply • cooperate • discuss • examine	• accept • defend • devote • pursue	• codify • discriminate • display • order • organize	• internalize • verify

	• obey • respond	• seek	• systematize • weigh	

Psychomotor Objectives

This domain is characterized by progressive levels of behaviors from observation to mastery of a physical skill. Several different taxonomies exist.

Simpson (1972) built this taxonomy on the work of Bloom and others:

- Perception - Sensory cues guide motor activity.
- Set - Mental, physical, and emotional dispositions that make one respond in a certain way to a situation.
- Guided Response - First attempts at a physical skill. Trial and error coupled with practice lead to better performance.
- Mechanism - The intermediate stage in learning a physical skill. Responses are habitual with a medium level of assurance and proficiency.
- Complex Overt Response - Complex movements are possible with a minimum of wasted effort and a high level of assurance they will be successful.
- Adaptation - Movements can be modified for special situations.
- Origination - New movements can be created for special situations.

Dave (1970) developed this taxonomy:

- Imitation - Observing and copying someone else.
- Manipulation - Guided via instruction to perform a skill.
- Precision - Accuracy, proportion and exactness exist in the skill performance without the presence of the original source.
- Articulation - Two or more skills combined, sequenced, and performed consistently.
- Naturalization - Two or more skills combined, sequenced, and performed consistently and with ease. The performance is automatic with little physical or mental exertion.

Harrow (1972) developed this taxonomy. It is organized according to the degree of coordination including involuntary responses and learned capabilities:

- Reflex movements - Automatic reactions.
- Basic fundamental movement - Simple movements that can build to more complex sets of movements.
- Perceptual - Environmental cues that allow one to adjust movements.
- Physical activities - Things requiring endurance, strength, vigor, and agility.
- Skilled movements - Activities where a level of efficiency is achieved.

The following list is a synthesis of the above taxonomies:

Psychomotor Domain Hierarchy		
Level	**Definition**	**Example**
Observing	Active mental attending of a physical event.	The learner watches a more experienced person. Other mental activity, such as reading may be a pert of the observation process.
Imitating	Attempted copying of a physical behavior.	The first steps in learning a skill. The learner is observed and given direction and feedback on performance. Movement is not automatic or smooth.

Practicing	Trying a specific physical activity over and over.	The skill is repeated over and over. The entire sequence is performed repeatedly. Movement is moving towards becoming automatic and smooth.
Adapting	Fine tuning. Making minor adjustments in the physical activity in order to perfect it.	The skill is perfected. A mentor or a coach is often needed to provide an outside perspective on how to improve or adjust as needed for the situation.

Here are key verbs for each level you can use when writing psychomotor objectives:

Key Verbs for the Psychomotor Domain

- bend
- calibrates
- constructs
- differentiate (by touch)
- dismantles
- displays
- fastens
- fixes
- grasp
- grinds
- handle
- heats
- manipulates
- measures
- mends
- mixes
- operate
- organizes
- perform (skillfully)
- reach
- relax
- shorten
- sketches
- stretch
- write

How To Write Instructional Objectives

Instructional objectives should specify four main things:

- **Audience** - Who? Who is this aimed at?
- **Behavior** - What? What do you expect them to be able to do? This should be an overt, observable behavior, even if the actual behavior is covert or mental in nature. If you can't see it, hear it, touch it, taste it, or smell it, you can't be sure your audience really learned it.
- **Condition** - How? Under what circumstances will the learning occur? What will the student be given or already be expected to know to accomplish the learning?
- **Degree** - How much? Must a specific set of criteria be met? Do you want total mastery (100%), do you want them to respond correctly 80% of the time, etc. A common (and totally non-scientific) setting is 80% of the time.

This is often called the ABCD's of objectives, a nice mnemonic aid!

Tip: Never use the word *understand* in an objective. It is too vague, and does not specific a measurable behavior.

Typical Problems Encountered When Writing Objectives

Problems in Writing Objectives

Problem	**Error Type**	**Solution**
Too vast/complex	The objective is too broad in scope or is actually more than one objective.	Simplify/break apart.
False/missing behavior, condition, or degree	The objective does not list the correct behavior, condition, and/or degree, or they are missing.	Be more specific, make sure the behavior, condition, and degree is

		included.
Only topics listed	Describes instruction, not conditions. That is, the instructor may list the topic but not how he or she expects the students to use the information	Simplify, include ONLY ABCDs.
False performance	No true overt, observable performance listed.	Describe what behavior you must observe.

Assessment and Instructional Objectives

Assessment and instructional objectives are ideally closely bound. A well-written objective should clearly illustrate the most important criteria for assessing if the individual has accomplished the objective.

This section illustrates how a well-written objective assists one in developing valid assessment instruments. Psychomotor, affective, and cognitive types of objective are illustrated here.

Psychomotor Performance Target

Goal

Walk the length of a balance beam.

Objective Derived From Goal

Given a standard balance beam raised to a standard height, the student (attired in standard balance beam usage attire) will be able to walk the entire length of the balance beam (from one end to the other) steadily, without falling off, and within a six second time span.

Purpose of Assessment

To partially determine placement on a high school gymnastics team. Other assessments using other gymnastic devices will be used in conjunction with this assessment to determine the final ranking/placement. The criterion for acceptable performance is thus irrelevant here; higher scoring individuals simply have a better chance of being selected for the team.

Possible Biases

As males do not use the balance beam in gymnastics, this assessment is for females only. Thus, some may consider this test gender biased; but the rules of gymnastics dictate this distinction is necessary. Testing male's performance on equipment they will not use is irrelevant.

This test is biased against people who are physically incapable of mounting a balance beam and/or walking. However, these people would be incapable of performing on a gymnastics team and thus would not attempt the assessment in the first place.

Assessment Procedure

Pretest

Not needed. This is a sorting type of assessment and is designed to rank individuals, not chart their improvement and/or change in behavior.

Sole Test

The student (attired in standard balance beam usage attire) must walk the entire length of a standard balance beam raised to a standard height steadily, without falling off, and within a six second time span. **(Note how this part reflects the objective.)** A team of no less than three judges will observe a given individual perform this task three times, using a given scoring rubric to assign a score for each trial. The trial score for each trial is the average of all the judge's scores. The overall score for the individual is the average of the three trial scores.

Rubrics for Assessment

5 - Walks the balance beam flawlessly. Does not need to check balance, does not pause. Completes the walk within six seconds.

4 - Walks the beam, but is somewhat unsteady. Completes the walk within six seconds.
3 - Walks the beam, but is somewhat unsteady. May pause one or more times. Takes more than six seconds to complete the walk.
2 - Walks the beam, but is very unsteady, almost falling off, may pause one or more times, and/or takes more than six seconds.
1 - Falls off the beam before completing the walk.
0 - Falls off the beam immediately.

Conditions of Assessment

- Assessment occurs only during the walking phase, not during the mount/dismount phases.
- The individual indicates when the assessment should begin.
- The assessment ends as soon as the individual reaches the other end of the balance beam.
- A team of judges consisting of no less than three people will use the provided rubric to assess a given individual. Additional judges are optional.
- Individual judge's scores are averaged to determine a composite trial score for a given performance for a given individual.
- Each individual is given three chances to walk the beam. The combined time for these three chances should not exceed three minutes per individual.
- The average of these three trials (as determined by the judges using the provided rubric) is used to determine the overall score.

Validity Defense

- The same psychomotor task is used to assess the desired psychomotor performance.
- This type of assessment is easy to use and provides overt, non-ambiguous results.

Reliability Assessment

- Three judges are used to improve reliability of assessors. (Inter-rater reliability).
- Three trials per individual are allowed to improve reliability over time. (Test-retest reliability).

Assessment Package for Judges of the Balance Beam Exercise

Directions: Each individual must walk the balance beam. For each individual, use the following scale to assign a value to the individual's performance on the balance beam. Each individual will be given three trials or chances to walk the balance beam. Score each trial individually. After scoring each trial, hold up the numbered card in front of you that corresponds to the score you gave the individual for that trial. Your score will be averaged with the other judge's scores. Note that you must time the individuals; a maximum time of six seconds to walk the beam from one end to the other is permitted.

Scale

5 - Walks the balance beam flawlessly. Does not need to check balance, does not pause. Completes the walk within six seconds.
4 - Walks the beam, but is somewhat unsteady. Completes the walk within six seconds.
3 - Walks the beam, but is somewhat unsteady. May pause one or more times. Takes more than six seconds to complete the walk.
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- The average of these three trials (as determined by the judges using the provided scale) is used to determine the overall score.

Scoring Template for an Individual

Balance Beam Rubric					
	Judge 1	**Judge 2**	**Judge 3**	**Trial Total (Sum of Judge's scores)**	**Trial Score (Trial Total/# of Judges)**
Trial 1					
Trial 2					
Trial 3					
				Overall Score (Sum of Trial Scores/# of Trials) =	

Affective Learning Target

Goal - Learner's perspective on civil rights will improve.

Objectives Derived From Goal

1. Given the opportunity to work in a team with several people of different races, the student will demonstrate a positive increase in attitude towards non-discrimination of race, as measured by a checklist utilized/completed by non-team members.
2. Given the opportunity to choose/not choose to do so, the student will demonstrate a positive increase in attitude towards non-discrimination of race, as demonstrated by choosing to participate (at varying levels of responsibility) in the organization of a racial equality rally.
3. Given the opportunity to rank non-discrimination of race in relationship to other issues, the student will demonstrate a positive increase in attitude towards non-discrimination of race, as demonstrated by ranking non-discrimination of race as more important than other issues.

Purpose of Assessment

To determine if an individual's attitude towards racial equality has improved. If the student's score increases at all on the posttest, they are considered successful.

Possible Biases

- People from different cultures may use different body language and facial expressions to convey the same meaning. The assessor must take this into account when assessing an individual.
- There may be other intrinsically-based (and thus difficult to quantify) motivations for participating in a rally.

Assessment Procedure - Objective 1

Objective 1 Pretest

The student being assessed would be part of a racially diverse group. The provided rubric would be employed by the instructor or by someone not actually participating in the group. To have a group member or members employ the rubric as a pretest device would invalidate it, for the individual's

actions and mannerisms would change upon introduction of the rubric. This could interfere with or augment the instruction that would follow.

Objective 1 Posttest

The student being assessed would be part of a racially diverse group. The provided rubric would be employed by the instructor or by someone not actually participating in the group. Ideally, this assessor should be the same person who administered the pretest. To have a group member or members employ the rubric as a posttest device would invalidate it, for the individual's actions and mannerisms would change upon introduction of the rubric. Ideally, each student should be assessed at least two times with different groups.

Comparisons between pretest and posttest scores would be used to determine if a positive increase in attitude towards non-discrimination of race has occurred.

Rubrics/Scoresheets for Assessment

Directions: For each individual, use the following scale to assign a value to the individual's performance on each item listed in the left column. Place an X in the most appropriate square to the right of each item. Example: If you decide a student only rarely attended individuals with the same amount of interest, place an X in the box under the 2. Twenty-eight possible points. Observe each student for 10 minutes.

Affective Objective 1 Rubric				
Student Name:	**4** Most (90-100%) of the time	**3** Usually (60 - 89%) of the time	**2** Somewhat (30 - 59%) of the time	**1** Rarely (0 - 29%) of the time
Student attends to each individual with the same amount of interest.				
Student uses the same respectful tone of voice when addressing each team member.				
Student does not make culturally sensitive or degrading remarks. (Example: "You Brugians are always thinking about yourselves.")				
When a disagreement occurs, the student addresses the disagreement and not the other team member(s). (Example: "I don't believe that is true because..." NOT "Maybe where you come from that's true, but...")				
Student generally maintains the same body language and facial expressions for all other team members. (Example: The student frowns at Xavier all the time, but smiles at Jessica all the time.)				

Student maintains same level of eye contact with all other group members.				

Conditions of Assessment

- The student must be unaware s/he is being assessed.
- Pretest/posttest environmental conditions must be as similar as possible.
- Group size should remain constant for pre and posttests.
- Group topics should remain fairly consistent between pre and posttests.

Validity Defense

- Overt, measurable actions are used to assess the student.
- All assessment tasks work together in that they are assessing verbal and non-verbal responses (Internal structure evidence.)
- This type of assessment is easy to use and provides overt, non-ambiguous results. (Practicality evidence.)
- No negative or unexpected side effects are foreseen when this assessment is used. (Consequential evidence.)

Reliability Assessment

- The same assessor is used on the pretest and posttest. (Assessor reliability).
- Two trials per individual are allowed to improve reliability over time. (Test-retest reliability).
- Environmental factors that may affect how a student reacts are neutralized.
- Group dynamics, such as size and topic, are made as consistent as possible to neutralize possible external variations that might affect testing.

Assessment Procedure - Objective 2

Pretest

Via a paper handout, students would be asked to volunteer to work on developing a rally for racial equality. Students would return the handout having checked how they would like to (or not to) participate in the rally. The provided scoresheet would be employed by the instructor to assign a pretest score to each student.

Posttest (After instruction)

Via a paper handout, students would be asked to volunteer to work on developing a rally for racial equality. Students would return the handout having checked how they would like to (or not to) participate in the rally. The provided scoresheet would be employed by the instructor to assign a posttest score to each student.

Comparisons between pretest and posttest scores would be used to determine if a positive increase in attitude towards non-discrimination of race has occurred.

Scoresheet

Assign each individual a numeric score based on his/her indicated level of involvement on the completed handout.

5 - Master organizer of entire rally.
4 - Organize a specific part of the rally.
3 - Assistant for two or more organizers of a specific part of the rally.
2 - Assistant for one organizer of a specific part of the rally.
1 - Minimal involvement (i.e., man refreshment stand night of the rally).
0 - No involvement.

Conditions of Assessment

- No other external incentive must be provided/available to the student that might influence his/her choice of level of involvement.
- Pretest/posttest environmental conditions must be as similar as possible.

Validity Defense

- Overt, measurable actions are used to assess the student.

- This type of assessment is easy to use and provides overt, non-ambiguous results. (Practicality evidence.)
- No negative or unexpected side effects are foreseen when this assessment is used. (Consequential evidence.)

Reliability Assessment

- The same assessor is used on the pretest and posttest. (Assessor reliability).
- Environmental factors and covert incentives that may affect how a student reacts are neutralized.

Assessment Procedure - Objective 3

Pretest

Via a pencil and paper quiz, students would be asked to rank the relative importance of non-discrimination of race as compared to other social issues.

Posttest (After instruction)

Via a pencil and paper quiz, students would be asked to rank the relative importance of non-discrimination of race as compared to other social issues.

Comparisons between pretest and posttest rankings would be used to determine if a positive increase in attitude towards non-discrimination of race has occurred.

Sample Quiz

1. You are the mayor of a large city. You have a budget surplus. Please rank the following programs in order of importance. The higher-ranking items will receive more money for programs that support them, and thus will be more successful.
   __ Additional Policemen
   __ Racial Equality Programs
   __ Spouse Abuse Shelters
   __ Pollution Control Programs
2. You are the new superintendent in an inter-racial school. Several gangs exist, and there is graffiti everywhere. Teachers are afraid of some of the students. No type of security measures are in place at this time. You have a plan to change things, but you need to decide what to do first, second, etc. Please rank the following programs in order of importance.
   __ Racial Tolerance Programs
   __ Gang Control
   __ Graffiti Cleanup
   __ Security Program
3. You are the social director in a small, rural town in mid-western United States. The population of your town was 100% white until this week. A Mexican family of 10 just moved into town. Rumor has it that the father of the family has no job at this time. The mother creates and sells crafts out of her house. The 8 children's ages span between 1 and 15. As social director, what do you think you should do? Please rank the following ideas in order of importance.
   __ Advertise Available Jobs Throughout Town
   __ Host an Open House for the Mother's Crafts
   __ Mexican Culture Awareness Social
   __ Do Nothing Unless Asked By Someone
4. You are in an airplane with your classmates, a group of Indians, and a group of Eskimos. The plane crashes in the water, but fortunately many of you survive. The plane is sinking. You are one of the least injured people. Each group is huddled near an exit, and will be equally easy (or difficult) to rescue. Some of the less injured will probably be able to rescue themselves, but you are not sure. You have to decide who to rescue first, second, and so on. You doubt you have time to rescue everyone before the plane sinks completely. Please rank the following groups in the order you would save them.

__ Your classmates
__ The most injured
__ The Indians
__ The Eskimos
__ The least injured
__ Obviously dead bodies

5. You are in charge of a private golf club. It was open only to white people with low handicaps (10 or less). Recently, the clubhouse burnt down, and many of the members have left for other clubs. You have to rebuild the physical site, and also build up the number of members. Please rank the following decisions in order of importance.
__ Raise membership fees to help pay for the new clubhouse.
__ Open the club membership to anyone who can pay the membership fee.
__ Place a handicap limit on perspective members. Those people with a handicap greater than 20 cannot join the club.
__ Build a cheap, temporary clubhouse for use until the new clubhouse can be built.

Scoring

1. Item to examine for positive change is "Racial Equality Programs."
2. Item to examine for positive change is "Racial Tolerance Programs."
3. Item to examine for positive change is "Mexican Culture Awareness Social."
4. Items to examine for positive change are "Most Injured" and "Least Injured."
5. Item to examine for positive change is "Open the club membership to anyone who can pay the membership fee."

Conditions of Assessment

- No other external incentive must be provided/available to the student that might influence his/her rankings.
- Pretest/posttest environmental conditions must be as similar as possible.

Validity Defense

- Overt, measurable actions are used to assess the student.
- This type of assessment is easy to use and provides overt, non-ambiguous results. (Practicality evidence.)
- No negative or unexpected side effects are foreseen when this assessment is used. (Consequential evidence.)

Reliability Assessment

- The same assessor is used on the pretest and posttest. (Assessor reliability).
- Environmental factors and covert incentives that may affect how a student reacts are neutralized.

Cognitive Learning Target: Problem Solving/Synthesis Level

Goal - Students will be able to create a cast (using cartoon characters, modern entertainers, etc.) which reflect the personalities of the characters in a piece of literature, and explain why they have chosen the particular cast members. (The cast would be those characters, cartoon figures, entertainers, etc. that they choose to play the role of each character in an upcoming TV show, movie, play, etc.)

Objective

Given two cartoon characters of the student's choice, the student will be able to list five major personality traits of each of the two characters, combine these traits (either by melding traits together, multiplying together complimentary traits, or negating opposing traits) into a composite character, and develop a short (no more than 20 frames) storyboard for a cartoon that illustrates three to five of the major personality traits of the composite character.

Purpose of Assessment

To determine if a student in a high school setting can construct a composite character based on the personality traits of two given characters, can depict the composite character's personality, and can logically defend the composite character's personality and actions. This is a pass/fail assignment. Student receiving a score of 26 or more on the provided rubric have passed this test.

Possible Biases

Some students may not be familiar with certain cartoon characters, due to cultural differences, or simply because of lack of exposure to the cartoon genre. In these cases, the instructor may want to assist the student in choosing two characters (cartoon or otherwise, fictional or non-fictional) the student is familiar with, so the student can complete the assignment without negative bias.

Assessment Procedure

The student will list five major personality traits of each of the two characters. These are perceived traits, and are not judged by the instructor as to their correctness. The student must then combine the traits of the two characters in a logical, defensible manner. Each new trait must be defended by the student either verbally or in writing. The following three examples illustrate this:

1. Melding traits - Garfield loves lasagna. Green Lantern receives his power from a green lantern. His power is focused through a ring he wears. The ring must be recharged by the lantern every 24 hours. In the composite character, it may be necessary to recharge the Ring of Pasta with the Lasagna of Power every 24 hours.
2. Multiplying together complimentary traits - If you have two characters that both fight for justice, the composite character would fight for justice as well, perhaps at a level some would consider fanatical.
3. Negating opposing traits - If one character is good and the other evil, the composite character would be neutral. Thus he/she/it might respond to a bank robbery not because it is the right thing to do, or to share in the loot, but perhaps to collect a reward.

Then the student would develop short (no more than 20 frames) storyboard for a cartoon that illustrates three to five of the major personality traits of the composite character. The storyboard could be plain text (one paragraph would comprise a frame), rough sketches (one sketch per frame), colored drawings (one drawing per frame), or any combination thereof.

The instructor(s) would assess the storyboard by examining the listing of original personality traits and their combinations into a new composite character. The storyboard must reflect at least three of the composite traits in a story that fits the composite character. If the student offers a verbal defense, the instructor(s) must listen to this defense. If the defense is in writing, the instructor(s) must consult it at this time. The instructor(s) must use the provided rubric to assign a score to the student. Students must complete this assessment in two hours.

Conditions of Assessment

- Student must be in an environment that supports paper and pencil activities. Optionally, sketching and coloring tools may be available for students wishing to express themselves with these tools.
- Ideally, two or more instructors would assess a given student, as the assessment is partially subjective in nature.

Validity Defense

- Overt, measurable actions are used to assess the student.
- All assessment tasks work together in that they are assessing a synthesis task. (Internal structure evidence.)
- This type of assessment is easy to use and provides overt, non-ambiguous results. (Practicality evidence.)
- No negative or unexpected side effects are foreseen when this assessment is used. (Consequential evidence.)

Reliability Assessment

- Subjectivity is minimized through the use of a rubric.

- Two or more judges are recommended to improve reliability of assessors. (Inter-rater reliability).

Assessment Procedure

Read the following to the students. Also, have this available in print form:

A. Choose two cartoon characters. List five major personality traits of each of the two characters. Combine these traits (either by melding traits together, multiplying together complimentary traits, or negating opposing traits) into a composite character, and develop a short (no more than 20 frames) storyboard for a cartoon that illustrates three to five of the major personality traits of the composite character. Melding traits together, multiplying together complimentary traits, and negating opposing traits are defined in this way:

1. Melding traits - Garfield loves lasagna. Green Lantern receives his power from a green lantern. His power is focused through a ring he wears. The ring must be recharged by the lantern every 24 hours. In the composite character, it may be necessary to recharge the Ring of Pasta with the Lasagna of Power every 24 hours.
2. Multiplying together complimentary traits - If you have two characters that both fight for justice, the composite character would fight for justice as well, perhaps at a level some would consider fanatical.
3. Negating opposing traits - If one character is good and the other evil, the composite character would be neutral. Thus he/she/it might respond to a bank robbery not because it is the right thing to do, or to share in the loot, but perhaps to collect a reward.

> "Each teacher begins a new term or course with the expectation that about a third of his students will adequately learn what he has to teach. He expects about a third to fail or just 'get by'. Finally, he expects another third to learn a good deal of what he has to teach, but not enough to regard them as a ´good student' (Bloom, Hastings, Madaus, 1971, p.,43)

Bloom considered these expectations, built upon the normal curve, as the most wasteful and destructive aspect of the educational system. He believed that most students, or about 90%, could master what is to be taught. The basic instructional task was to define the course into educational units and find methods and material to help the students to reach the set level. Then the student would be tested with a formative test that would either indicate mastery or emphasise on what was still needed to be learned, to reach the next level. To reach mastery the student needed to get 80 - 90 % right.

Bloom based his theory of Learning for Mastery on Caroll's model of learning which is:

1.Time allowed, 2. Perseverance., 3.Aptitude, 4.Quality of instruction. 5. Ability to Understand Instruction.

This model testifies that if students are normally distributed with regard to aptitude for some subject and all students are given exactly the same instruction and learning time, then achievement measured when the task is finished will be normally distributed. Under such circumstances the correlation between aptitude and achievement will be relatively high. On the contrary, if students are normally distributed with respect to aptitude, but the quality of instruction and time allowed for learning are made suitable for the needs of each learner then most students will achieve mastery in set task. The correlation between aptitude and achievement should advance to zero (Block.,1970).

In developing mastery learning it is essential to define what mastery is and whether or not a student has attained it. Therefor it is necessary to make a specification of objectives and the contend of instructions, and translate these into evaluation procedure. The evaluation is both formative and summative. Given a description of the learning task for each unit, a constructed brief diagnostic progress test, a formative test, is given to determine which of the unit's tasks have or have not been mastered. Frequent formative evaluation tests pace the student's learning and help them to put forward necessary effort at the right time. The main purpose of the formative testing is to observe the

learning process not to grate the student's achievement. These tests also provide information for the teachers of what instructions need modifications.
The summative evaluation is a general assessment which 'sums up' the total achievement in the course and grate the students.
Bloom (1968) suggests that the mastery model to teaching will greatly improve the performance of low - aptitude students and will have a smaller effect on high - aptitude students. Because of individualised classes give students the time and instruction they individually need, the model suggests, high levels of achievement should be reacted by all students not only a few.
Another plan for mastery learning called Personalised System of Instruction was developed by Keller and his colleges Assi, Bori and Sherman when they were developing a new department of psychology in the university of Brasilia. PSI or Kellers Plan as it is sometimes called, was developed for higher education whereas Blooms mastery was to accomplishment mastery learning in the schoolroom.

Kellers Plan.
This system is derived from the behaviourists reinforcement psychology and with Skinners ideas of teaching machines and programmed instructions. The group had in mind that students would perform better if they found satisfaction in their work. They meant that positive consequences (instructors praise, good grades, feeling of achievement) were more important than the negative one (boredom, failure or other forms of punishment). The plan they developed consists of five main elements:
1.Mastery criteria, 2.Self pace, 3.Stress upon the written word, 4.The use of proctors 5.Lectures used for motivation rather than sources of information.

1. PSI course is divided into units and students have to show a mastery of the unit to be able to go ahead. The mastery level is usually set at 85 - 100% result. After studying for a unit, students are assessed by the proctors and if they fail to reach the mastery level the students try again until they pass.

2. Students are allowed to study at their own pace and no restrain on the students study time. The student can take the unit quiz when he is prepared to show mastery on the subject. If he fails it will not be held against him, and he will be able to repeat it whenever he is ready.
3. Stress upon the written word is another factor in PSI. The course is based upon a standard textbook, journal articles and other reading. The course has a study guide. A typical guide would consist of, an introduction, statements of objectives, procedure, study questions and supplementary material decided by the course design.
4. The use of proctors is also specific for PSI. Proctors are undergraduate students who have successfully finished the course and are aware of the problems and questions that new students in the course come across with. Their job is to assist the students, score their quiz and react as a feedback to the instructor of the course in general.
5. The lectures in the PSI plan are not for instructional purpose but for enrichment and to provide inspiration. The instructor might have a lecture when a certain number of students have passed certain number of units.

The effect of PSI courses has been measured in many ways. Kulik, Kulik and Smith 1976 reviewed some studies which investigated PSI. They asked if PSI was effective regarding:
1. End of course performance.
2. Retention
3. Transfer
4. Attitudes

They found out:
1. End of course performance. Some college studies showed that 38 out of 39 performed better with PSI method than the conventional ones. An average student who would score 50% under

conventional method would score 75% under PSI. In a meta analysis conducted by Kulik, Kulik and Choen, the result of comparison between conventional teaching and PSI showed that 48 out of 61 studies reported statistically significant difference in favour of PSI. In the typical PSI class in this set of studies the final examination average was 73,6; in the typical conventional class the average was 65,9. The difference between PSI and conventional classes was significant at a very high level of confidence, $t(47) = 12{,}04$, $p < .0001$.

2. Retention. In the research of Kulik, Kulik and Smith 1976, 9 studies investigated retention over intervals ranging from 3 weeks to 15 months. In each of the studies the PSI students performed better than the students who had traditional lectures. These 9 studies strongly suggested that PSI promotes more than rote memorisation, it does not only help to learn factual information but also the meaningful application and concepts.
3. Transfer. If students learning under PSI plan later join a course taught traditionally, they are more likely to perform better than those that have not had any PSI experience. Studies done on transfer show that PSI students learn deeper than rote memorisation. This has lead to the hypotheses of that a) sequence learning make PSI students more advanced than others, b) PSI provides pleasant first encounters with the subject and helps to build the student's sense of competence in a discipline c) students pick up good study habits in PSI courses, and learn how to study independently (Kulik, Kulik, Smith., 1976, p.,24).
4. Attitude. Most of the investigation found that students react favourably to PSI. One or two out of 50 in a class react negatively to a PSI course. In Kulik,Kulik and Cohen 1979 meta analysis, 10 out of 11 rated in favour of overall PSI quality, 8 out of 8 in favour of learning, 6 out of 8 in favour of enjoyment and 7 out of 8 in favour of workload (p.,312). What it was that made PSI more effective rather than the conventional learning was, according to Kulik, Kulik and Smith 1976, was: 1. Small units of work, 2. Immediate feedback at every step, 3. A requirement of mastery at every step. Other not as crucial factors were: 4. Interaction with proctors, 5: Self pacing, 6. Absence of regular lectures.

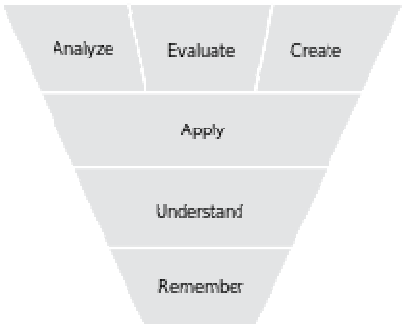
According to Bloom (1968) nearly all students can achieve mastery of material in a course given enough time and quality of instruction that they need. Teaching for mastery raises the overall level of achievement and reduces variations of performance. The strongest influence of mastery teaching is for the weaker students. Mastery learning has shown that student's performance rises and students have a successful and rewarding experience learning under mastery conditions rather than the traditional methods

BLOOM'S TEXONOMY

Bloom's Taxonomy is a classification of learning objectives within education proposed in 1956 by a committee of educators chaired by Benjamin Bloom who also edited the first volume of the standard text, *Taxonomy of educational objectives: the classification of educational goals*, Although named after Bloom, the publication followed a series of conferences from 1949 to 1953, which were designed to improve communication between educators on the design of curricula and examinations. At this meeting, interest was expressed in a theoretical framework which could be used to facilitate communication among examiners. This group felt that such a framework could do much to promote the exchange of test materials and ideas about testing. In addition, it could be helpful in stimulating research on examining and on the relations between examining and education. After considerable discussion, there was agreement that such a theoretical framework might best be obtained through a system of classifying the goals of the educational process, since educational objectives provide the basis for building curricula and tests and represent the starting point for much of our educational research.

It refers to a classification of the different objectives that educators set for students (learning objectives). Bloom's Taxonomy divides educational objectives into three "domains": Cognitive, Affective, and Psychomotor (sometimes loosely described as *knowing/head*, *feeling/heart* and *doing/hands* respectively). Within the domains, learning at the higher levels is dependent on having attained prerequisite knowledge and skills at lower levels.[7] A goal of Bloom's Taxonomy is to motivate educators to focus on all three domains, creating a more holistic form of education.
A revised version of the taxonomy was created in 2000.
Bloom's Taxonomy is considered to be a foundational and essential element within the education community as evidenced in the 1981 survey *Significant writings that have influenced the curriculum: 1906-1981*, by H.G. Shane and the 1994 yearbook of theNational Society for the Study of Education.
A mythology has grown around the taxonomy, possibly due to many people learning about the taxonomy through second hand information. Bloom himself considered the Handbook,[1] "One of the most widely cited yet least read books in American education

Cognitive



Categories in the cognitive domain of Bloom's Taxonomy (Anderson &Krathwohl, 2001)
Skills in the **cognitive domain** revolve around knowledge, comprehension, and critical thinking on a particular topic. Traditional education tends to emphasize the skills in this domain, particularly the lower-order objectives.
There are six levels in the taxonomy, moving through the lowest order processes to the highest:
Knowledge
Exhibit memory of previously learned materials by recalling facts, terms, basic concepts and answers

- Knowledge of specifics - terminology, specific facts

- Knowledge of ways and means of dealing with specifics - conventions, trends and sequences, classifications and categories, criteria, methodology
- Knowledge of the universals and abstractions in a field - principles and generalizations, theories and structures

Questions like: What are the health benefits of eating apples?
Comprehension
Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating the main ideas

- Translation

- Interpretation
- Extrapolation

Questions like: Compare the health benefits of eating apples vs. oranges.

Application

Using new knowledge. Solve problems in new situations by applying acquired knowledge, facts, techniques and rules in a different way

Questions like: Which kinds of apples are best for baking a pie, and why?

Analysis

Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations

- Analysis of elements
- Analysis of relationships
- Analysis of organizational principles

Questions like: List four ways of serving foods made with apples and explain which ones have the highest health benefits. Provide references to support your statements.

Synthesis

Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions

- Production of a unique communication
- Production of a plan, or proposed set of operations
- Derivation of a set of abstract relations

Questions like: Convert an "unhealthy" recipe for apple pie to a "healthy" recipe by replacing your choice of ingredients. Explain the health benefits of using the ingredients you chose vs. the original ones.

Evaluation

Present and defend opinions by making judgments about information, validity of ideas or quality of work based on a set of criteria

- Judgments in terms of internal evidence
- Judgments in terms of external criteria

Questions like: Do you feel that serving apple pie for an after school snack for children is healthy?

Affective

Skills in the **affective domain** describe the way people react emotionally and their ability to feel another living thing's pain or joy. Affective objectives typically target the awareness and growth inattitudes, emotion, and feelings.

There are five levels in the affective domain moving through the lowest order processes to the highest:

Receiving

The lowest level; the student passively pays attention. Without this level no learning can occur. Receiving is about the student's memory and recognition as well.

Responding

The student actively participates in the learning process, not only attends to a stimulus; the student also reacts in some way.

Valuing

The student attaches a value to an object, phenomenon, or piece of information. The student associates a value or some values to the knowledge he acquired.

Organizing

The student can put together different values, information, and ideas and accommodate them within his/her own schema; comparing, relating and elaborating on what has been learned.

Characterizing

The student holds a particular value or belief that now exerts influence on his/her behaviour so that it becomes a characteristic.

Psychomotor

Skills in the **psychomotor domain** describe the ability to physically manipulate a tool or instrument like a hand or a hammer. Psychomotor objectives usually focus on change and/or development in behavior and/or skills.

Bloom and his colleagues never created subcategories for skills in the psychomotor domain, but since then other educators have created their own psychomotor taxonomies.[11] Simpson (1972)[12] among other contributors, such as Harrow (1972) and Dave (1967), created a Psychomotor Taxonomy that helps to explain the behaviour of typical learners or high performance athletes. The proposed levels are:

Perception

The ability to use sensory cues to guide motor activity. This ranges from sensory stimulation, through cue selection, to translation. Examples: Detects non-verbal communication cues. Estimate where a ball will land after it is thrown and then moving to the correct location to catch the ball. Adjusts heat of stove to correct temperature by smell and taste of food. Adjusts the height of the forks on a forklift by comparing where the forks are in relation to the pallet. Key Words: chooses, describes, detects, differentiates, distinguishes, identifies, isolates, relates, selects.

Set

Readiness to act. *It includes mental, physical, and emotional sets. These three sets are dispositions that predetermine a person's response to different situations* (sometimes called mindsets). Examples: Knows and acts upon a sequence of steps in a manufacturing process. Recognize one's abilities and limitations. Shows desire to learn a new process (motivation). NOTE: This subdivision of Psychomotor is closely related with the "Responding to phenomena" subdivision of the Affective domain. Key Words: begins, displays, explains, moves, proceeds, reacts, shows, states, volunteers.

Guided Response

The early stages in learning a complex skill that includes imitation and trial and error. Adequacy of performance is achieved by practicing. Examples: Performs a mathematical equation as demonstrated. Follows instructions to build a model. Responds to hand-signals of instructor while learning to operate a forklift. Key Words: copies, traces, follows, react, reproduce, responds

Mechanism

This is the intermediate stage in learning a complex skill. *Learned responses have become habitual and the movements can be performed with some confidence and proficiency*. Examples: Use a personal computer. Repair a leaking tap. Drive a car. Key Words: assembles, calibrates, constructs, dismantles, displays, fastens, fixes, grinds, heats, manipulates, measures, mends, mixes, organizes, sketches.

Complex Overt Response

The skillful performance of motor acts that involve complex movement patterns. Proficiency is indicated by a quick, accurate, and highly coordinated performance, requiring a minimum of energy. This category includes performing without hesitation, and automatic performance. For example, players will often utter sounds of satisfaction or expletives as soon as they hit a tennis ball or throw a football, because they can tell by the feel of the act what the result will produce. Examples: Maneuvers a car into a tight parallel parking spot. Operates a computer quickly and accurately.Displays competence while playing the piano. Key Words: assembles, builds, calibrates, constructs, dismantles, displays, fastens, fixes, grinds, heats, manipulates, measures, mends, mixes, organizes, sketches. NOTE: The Key Words are the same as Mechanism, but will have adverbs or adjectives that indicate that the performance is quicker, better, more accurate, etc.

Adaptation

Skills are well developed and the individual can modify movement patterns to fit special requirements. Examples: Responds effectively to unexpected experiences. Modifies instruction to meet the needs of the learners. Perform a task with a machine that it was not originally intended to do (machine is not damaged and there is no danger in performing the new task). Key Words: adapts, alters, changes, rearranges, reorganizes, revises, varies.

Origination

Creating new movement patterns to fit a particular situation or specific problem. Learning outcomes emphasize creativity based upon highly developed skills. Examples: Constructs a new theory. Develops a new and comprehensive training programming.Creates a new gymnastic routine. Key Words: arranges, builds, combines, composes, constructs, creates, designs, initiate, makes, originates

BEHAVIOURAL OBJECTIVES (MAGER'S APPROACH)

MEANING OF BEHAVIOURAL OBJECTIVES

Behavioral objectives are the smaller, observable, and measurable intermediate goals that build in a stepwise fashion toward the completion of the broader long-term goal that is often more complicated and comprehensive. Behavioral objectives that are stated in observable and measurable terms help goal setters understand whether the strategies they are using to achieve their goal are resulting in change or whether they need to modify their efforts to improve the likelihood of accomplishing the desired outcome.

Behavior change is not a new concern. Information about creating effective behavioral goals and objectives to facilitate behavior change has a very long history in areas such as industry, sports, human service organizations, and education (Mager, 1961; Sulzer-Azaroff& Mayer, 1977; Locke & Latham, 1985, 1990). Teachers use behavioral objectives to guide and improve classroom instruction for groups of students, manage classroom social behaviors, and support individual students in need of more intensive social and academic instruction and support (Alberto & Trout-man, 1999; Maag, 2004). Behavioral goals and objectives are included in Individual Education Plans (IEPs) for stu-dentsinneed of special education services. The development of educational goals and behavioral objectives was included as oneofthemandatesof the Education for all Handicapped Children Act of 1975 (PL94-142) and continued thereafter to be considered an important element for facilitating behavior change resulting from the instructional process.

CHARACTERISTICS OF BEHAVIORAL OBJECTIVES

According to Alberto and Troutman (1999), each behavioral objective should identify the following elements:

1. person(s) for whom the objective is written (the learner),
2. behavior targeted for change,
3. conditions under which a behavior will be performed
4. criteria for determining when the acceptable performance of the behavior occurs.

The learner(s) can be an individual person or a group of individuals. For instance, a learner identified within a behavioral goal could be a student, a classroom, a group of individuals participating in specific track and field activities, or an entire basketball team. Once the learner is defined, the behavior targeted for change must be likely to be repeated over time and must be clearly defined operationally in behavioral terms so that whenever it is performed, it can be observed and measured across repeated occasions. An effective definition of the desired behavior ensures that an outside observer will be able to confirm that the target behavior has occurred.

Thus, it is important when defining the target behavior to avoid words and phrases such as "being disruptive," "staying on task," or "enjoying a story" that have not been operationally defined in behavioral terms. These words and phrases can mean different behaviors to different people. For instance, a substitute teacher may define "being disruptive" as a student tappingapencil on the desk loudly enough that it can be heard throughout the room. The student's teacher, however, may only be

recording "being disruptive" when the child begins yelling so loudly that it can be heard out in the hallway. Behavior definitions that are not stated clearly enough (operationally in specific behavioral terms), for everyone to interpret in the same way, can confuse both the learner and the individuals monitoring the learner's performance. This confusion is likely to lead to further decrease in the likelihood that a goal will be achieved by the learner.

The definition of the behavior should also identify elements of the teaching/learning context that are important for determining the conditions in which a behavior is to occur. The circumstances, requests, materials, and instructions that are identified in the behavioral objective as important elements in the context in which a behavior should be performed must be sufficiently detailed to allow a teaching/learning context to be provided repeatedly. The specific environmental cues that are present when a behavior is expected to occur must be described in enough detail to ensure there will be clear and consensual understanding of exactly what such cues include. Frequently the statement of an objective begins with condition statements, such as the following:

- Given a map of the United States …
- Given independent study time …
- After reading this a paragraph about …

The final information necessary in an effective behavioral objective must be statements of the criteria for acceptable performance of the targeted behavior. This statement must define the minimal performance necessary to consider a behavioral response correct and sets a standard for evaluation purposes. There are a number of ways in which to evaluate a response: accuracy (number of items correct), frequency of occurrence (number of behaviors performed), duration (behavior occurring within a time period), or latency (time taken until a response occurs). Another consideration in determining criteria for successful accomplishment of behavioral objectives involves how many times a learner must meet a criterion before the behavior is considered learned. Information about the criteria for evaluating a correct response will guide the ways in which learner performance of the behavioral objective will be measured..

IMPORTANT CONSIDERATIONS FOR DESIGNING BEHAVIOR OBJECTIVES

Behavioral objectives must be written in such a way that the aim is for the individual learner to remain positively motivated to continue working on the long-term goal by experiencing success on the smaller-scope behavioral objectives. If a behavioral objective is too broad, complex, and difficult, a learner may stop trying to perform the behavior. Behavioral objectives are intended to provide feedback for successful performance over time, and this progress can reinforce the learner with positive feedback. The learner's motivation also may decrease if behavioral objectives are too easy. The person working on a behavioral objective that is easily accomplished can become bored with the learning opportunity. Or it may take a long time to achieve the stated goal because there are too many objectives that must be met, which makes the goal seem unobtainable to the learner.

Individuals designing behavioral objectives must balance the number of objectives within each long-term goal as well as the level of difficulty involved in each behavioral objective to help ensure the learner will continue working on a long-term goal. Developing effective behavioral objectives can be challenging. Individuals who write behavioral objectives must monitor progress closely and make modifications as needed over time to help ensure that motivation on the part of the learner remains high, the criteria identified for judging success are effective for evaluating progress, and progress toward the overall goal is being made in a timely manner.

The Magerian approach to writing behavioural objectives and learning outcomes

The case for writing very-tightly-constructed behavioural objectives or learning outcomes as an integral part of course, curriculum and lesson design has been strongly influenced by the leading proponent of such objectives - the American educational psychologist Robert F. Mager. His definitive

work on the subject, 'Preparing Instructional Objectives', triggered a 'bandwagon' movement during the late 1960's and early 1970's, a movement that led to the widespread adoption of a rigorous, objectives-based approach to the design of courses and teaching materials. Although Mager's stringent 'rules' for formulating objectives are not so strictly adhered to nowadays, his influence still remains strong in many areas of education and training - particularly in respect of competence-based and other vocationally-oriented courses, as we will see later.

According to Mager and his followers, a behavioural objective (learning outcome) should be written in clear, unambiguous terms that any teacher or student can understand without the need for explanation, and should include the following three basic elements.

(i) It should state what the student should be able to **do** at the end of the learning experience (ie should specify the required (**terminal** (or **end**) **behaviour**).

(ii) It should state the **conditions** or **constraints** under which this behaviour is to be exhibited.

(iii) It should give a clear indication of the **minimum standard of performance** that is considered acceptable.

Two examples of learning outcomes that have been written in this fashion are given below, and, in each case, all three of the elements that are required by Magerian 'purists' have been identified.

(a) 'The student should be able to weigh an object (**element 1**) of less than 100 grams using a single-pan balance (**element 2**) and obtain the correct answer to four decimal places at least 9 times out of 10 (**element 3**)'.

(b) 'The recruit must be able to fire five shots from a standard-issue rifle (**element 1**) in twenty seconds at a standard circular target 50 metres away (**element 2**) scoring at least 4 bullseyes (**element 3**)'.

Formulating learning outcomes in clear, unambiguous behavioural terms can be deceptively difficult, requiring a considerable amount of skill and practice. Clearly, if Mager's criteria were rigidly adhered to, drawing up a full list of learning outcomes for a teaching or training course would be an onerous and time-consuming task. The resulting list would probably be highly cumbersome and off-putting, and assessment would probably be unworkable in practice. For these reasons, there was a move away from the strict Magerian approach during the late 1970's and early 1980's. As a result, it became customary to define only the required end behaviour when writing outcomes, with the specification of the conditions under which the behaviour had to be achieved and the minimum standard of performance generally being omitted. This is still generally the case when writing learning outcomes for the great majority of degree-level courses where academics wish to retain flexibility.

TOPIC 7 : INSTRUCTIONAL PLANNING: CONCEPT, STEPS AND ISSUES RELATED TO INSTRUCTIONAL PLANNING.TEACHER AS A PLANNER.

The instructional planning comprises three basic steps. The first is *planning instruction,* which includes identifying specific expectations or learning outcomes, selecting materials to foster these expectations or outcomes, and organizing learning experiences into a coherent, reinforcing sequence. The second step involves *delivering the planned instruction* to students, that is, teaching them. The third step involves *assessing how well students learn or achieve the expectations or outcomes.* Notice that to carry out the instructional process the three teps should be aligned with one another. That is, the planned instruction should be logically related to the actual instruction and the assessments should relate to the plans and instruction.

(**step 1**), the teacher considers the characteristics of students and the resources and materials available to help attain desired changes

(step 2). Similarly, the information gained at the time of student assessment

(step 3) is useful in assessing the appropriateness of the learning experiences provided students (step 2) and the suitability of intended expectations or learning outcomes (step 1). Thus, the three steps are interdependent pieces in the instructional process that can be aligned in different orders.

All three steps in the instructional process involve teacher decision making and assessment. Obviously step 3, assessing expectations or learning outcomes, involves the collection and synthesis of formal information about how well students are learning or have learned. But the other two steps in the instructional process are also dependent upon a teacher's assessment activities. For example, a teacher's planning decisions incorporate information about student readiness, appropriate methods, available instructional resources, materials, student culture, language, and other important characteristics obtained from diagnostic assessments. Similarly, during instruction the teacher employs formative assessment to obtain information to help make decisions about lesson pace, reinforcement, interest, and comprehension. Remember that formative assessment includes observations and feedback intended to alter and improve students' learning while instruction is taking place. Thus, the entire instructional process, not just the formal assessment step, depends upon decisions that rely on assessment evidence of various kinds. The processes of planning and providing instruction are important activities for classroom teachers. Not only do they occupy a substantial amount of their time, but teachers define their teaching rewards in terms of their students' instructional successes. Teachers like to work with students, make a difference in their lives, and experience the joy of a student "getting it." Teachers feel rewarded when they know that their instruction hasrea ched their students. Since the classroom is where pride in teaching is forged, it is not surprising to find that teachers guard their classroom instructional time jealously. They want few interruptions to distract them from teaching their students.

The true rewards of teaching are identified in terms of the impact that the teachers' instruction and mentoring has upon students. Pride in teaching does not come from collecting lunch money, planning field trips, meeting the morning bus, and the thousand other semi administrative tasks teachers perform. It comes from teachers' knowledge that they have taught students to do, think, or perform some things they otherwise would have been unable to do, think, or perform.

Teachers plan in order to modify the curriculum to fit the unique characteristics of their students and resources. To plan, teachers reflect on and integrate information about their students, the subject matter to be taught, the curriculum they are following, their own teaching experience, the resources available for instruction, the classroom environment, and other factors. Their reflection and integration of these factors leads to an instructional lesson plan. The plan helps teachers allocate instructional time, select appropriate activities, link individual lessons to the overall unit or curriculum, sequence activities to be presented to students, set the pace of instruction, select the homework to be assigned, and identify techniques to assess student learning.
Planning helps teachers in five basic ways:

1. By helping them feel comfortable about instruction and giving them a sense of understanding and ownership over the teaching they plan.
2. By establishing a sense of purpose and subject matter focus.
3. By affording the chance to review and become familiar with the subject matter before actually beginning to teach it.
4. By ensuring that there are ways in place to get instruction started, activities to pursue, and a framework to follow during the actual delivery of instruction.
5. By linking daily lessons to broader integrative goals, units, or curriculum topics.

Classrooms are complex environments that are informal rather than formal, ad hoc rather than linear, ambiguous rather than certain, process oriented rather than product-oriented, and people-dominated rather than concept-dominated. The realities and strains of the classroom call for order and direction, especially when teachers are carrying out formal instruction. In such a world, some form of planning and organization is needed.
Planning instruction is a context-dependent activity that includes consideration of students, teacher, and instructional materials. A lesson that fails to take into account the needs and prior knowledge of the students or that poorly matches lesson aims to lesson instruction is doomed to failure. Similarly, a lesson that does not take into account the context in which it will be taught can also lead to difficulty. Teachers have a great deal of control over many classroom features associated with instructional planning. For example, most teachers have

control over the physical arrangement of the classroom, the rules and routines students must follow, the interactions with students, the kind of instruction planned and the nature of its delivery, and the methods used to assess and grade students. However, there are important features that teachers do not control. For example, most teachers have little control over the number and characteristics of the students in their classes, the size of their classroom, the quality of their instructional resources, and the Ministry/Department curriculum guidelines. In planning, teachers must arrange the factors they do control to compensate for the factors they do not.

The purpose of instructional planning is two-fold:

To effectively organize instructional activities and materials;

1. To ensure that student growth is at the center of instruction.
2. Effective instructional plans communicate:
3. Instructional Activities
4. Targeted Student Learning Objectives (Standards-based)
5. Instructional Procedures
6. Assessment of Learning
7. Clearly Assigned Staff Roles
8. School-Home Connections
9. Required Materials
10. Procedures for instructional plans include:
11. making every week standards-based (doesn't mean every standard domain is covered every week).
12. highlighting 15 vocabulary words each week.
13. thinking about how each activity might be a literacy activity.
14. providing opportunities to extend learning from Morning/Afternoon Meeting and Small Group into Active Learning.
15. reflecting real world experiences in a weekly plan.
16. incorporating a School-Home connection in the weekly plan.

TOPIC 8 : MODALS OF TEACHING :

MODELS OF TEACHING

Teaching means helping students to learn well. Powerful learners have a wide range of strategies for acquiring knowledge. Models of Teaching were designed to impart to learners such strategies, which will help learners to think clearly and wisely and build social skills and commitment. They help students to acquire information, ideas, skills, values, and ways of thinking and means of expressing themselves in a nutshell. They are taught how to learn (Eggen, Kauchak and Harder, 1979). Models of Teaching include many but not all of the major philosophical and psychological orientations towards teaching and learning. Each of them has coherent theoretical bases (Joyce and Weil, 1972).

The models approach to teaching was first described by Joyce and

Weil (1972), who defined a model as "- a pattern or plan which can be used to shape a curriculum or course to select Instructional material and to guide teachers action. Eggen (1979) defines Models as prescriptive teaching strategies designed to accomplish particular Instructional goals. Model differs from general teaching strategies because of this principle. General approaches to teaching are considered to be applicable to all teaching situations. But these Models of Teaching are not cure-alls or applicable to all teaching situations. Decceco (1968), making a distinction between teaching models and a theory of teaching says that, models do not have the rigor of tested theories. Some

useful models may eventually give way to empirically tested theories. Models of Teaching is a tool to help good teachers teach more effectively by making their teaching more systematic, But they are not substitute for teaching skills. They are rather complementary (Eggen, Kauchak and Harder, 1979).
A model of teaching consists of guidelines for designing educationalactivities and environment. It specifies ways of teaching and learning that are intended to achieve certain kinds of goals. The use of models requires an ability to identify different types of Instructional goals so that specific model can be selected to match a particular goal. A teaching model can be considered as a type of blue print for teaching (Eggen, Kauchak and Harder,1979). Models of Teaching are really models of learning. They are designed to bring about particular kinds of learning and to help students become more effective learners. It helps students to acquire information, ideas, skills, values, and ways of thinking and means of expressing themselves. It teaches the students, 'how to learn' (Joyce and Weil 1972). Increasing aptitude to learn is one of the fundamental purposes of these models. Models of Teaching enable the students to become powerful students (Joyce and Weil 1972)

CLASSIFICATION OF MODELS

Educators, Psychologists, Sociologists, System analysts, Psychiatrists and many others have developed theoretical positions about teaching and learning. A number or educationists have developed Models of Teaching from different sources such as classroom situations, research in psychology and training, therapies and theories. But Bruce Joyce and Marsha Weil brought about the revolutionary changes in Instructional strategies. Joyce and Weil grouped the models that they have discovered on the basis of their chief emphasis – the ways they approached educational goals and means. They have organized these models into four families:

1. The Information Processing Family
2. The Social Family
3. The Personal Family
4. The Behavioural Systems Family

The Information Processing Family

The models in this family are designed to teach students the skills of learning through thinking. They aim at increasing student's ability to seek and master information, organize it, build and test hypotheses, apply what they are learning in their independent reading and writing and their exploration of themselves and the world around them. Models of Teaching-Theoretical Overview

The Social Family

Man is a social creature. The models under Social Family range from the simplest processes of organizing students to work together to elaborate models that teach democratic social organization, analysis of major social problems and critical social values and issues. The models in this family emphasize the relationship of the individual with the society or other person.
The core objective is to help students learn to work together, to identify and solve problems, either academic or social in nature. Consequently, with respect to goals, models from this orientation, give priority to the improvement
of the individuals ability to relate others, the improvement of democratic processes and the improvement of the society (Joyce and Weil 1978).

The Personal Family

The models in this family focus on the individual and give emphasize on the development of integrated feeling, thinking self – the personal identity. They shape the environment around the capacity for self-education and the need to develop self-awareness and understanding. Models belonging to this family, share an orientation towards the individual and the development of selfhood. The emphasis of this model is on developing an individual into an integrated confident and competent personality. They attempt to help students understand themselves and their goal, and to develop the means for educating themselves.

The Behavioural Systems Family

The models in this family are developed taking into consideration the human beings ability to modify behaviour in response to tasks and feedback. These models are used in a wide variety of application from teaching information, concepts and skills, to increasing comfort and relaxation, decreasing phobias, changing habits, and learning to control one's behaviour. These models are evolved from attempts to develop efficient systems for them in terms of visible behaviour rather than understanding an unobservable behaviour.

ADVANCE ORGANIZER MODAL

Advance Organizer Model is based upon the Learning Theory ofMeaningful Verbal Learning formulated by David P Ausubel, an unusualeducational theorist. The theory of Meaningful Verbal Learning applies tosituation where the teacher plays the role of lecturer or explainer. The mainpurpose is to help students acquire subject matter.TheAusubel model is a deductive information processing model designed to teach interrelated bodies of content. He firmly espouses the viewthat each academic discipline has a hierarchically organized structure of , which form the information processing system of that discipline. He conceptualizes the discipline as levels of hierarchically organized concepts that begin with perceptual data at the bottom and proceeds through increasing levels of abstraction until the most abstract concept appear at the top so as to include or subsume less inclusive concept at lower stages of organization. These concepts are firmly linked to data to have a unique structural character.

Like Bruner, Ausubel believes that structural concepts of each discipline can be identified and taught to the students and they then become an information processing system, which serves as an intellectual map, which can be used to analyze particular domain and solve problems within those domains of activities The Advance Organizer strategy operates both substantively and programmatically on the learning material. Substantively it utilizes the basic organizing concepts and principles with the widest explanatory power,

inclusiveness, generality and readability of a given discipline. In this way the availability of relevant subsumers in the cognitive structure is ensured. Ausubel emphasizes that in learning, meaningful process is essential. Material has to related to established ideas in the cognitive structure of the learner in terms of ideas, which enable the material to be learned in a logically coherent way. In order to accomplish this, the learner needs access during

the learning process to structure ideas that can subsume the new material to be learned and incorporate into the cognitive structure of the learner and provide him with anchors for the new material Advance Organizer Model can be applied to any material, which can be

organized intellectually. It can be used in nearly every subject area, although it was designed for use with verbal material rather than with skills and mastery of problem solving paradigms. However, Ausubel assumes that it will be useful in the transfer of material to new problem settings. It provides a very good discipline for lectures. It can serve very well in the analysis of expository material in textbooks and other Instructional materials where abstractions and information alternate in various patterns.

Advance Organizer Model is useful to structure extended curriculum sequences or courses and to instruct students systematically in the key ideas of a field. The model can be shaped to teach the skills of effective reception learning. Critical thinking and cognitive reorganization can be explained to learners and they can apply these techniques independently to new learning. Whenever ideas or information need to be presented renewed or clarified the Advance Organizer Model is useful. Ausubel makes no attempt to handle the tasks, which are necessary in order to utilize Advance Organizer in inductive as well as reception learning. It seems logical that some modification would have to be made of the usual discovery procedures to accommodate the use of Advance Organizer. Although Ausubel stresses written and verbal material and expository or didactic presentation, this

need not be a hard and fast rule. Advance Organizer Model is never purely expository in the interactive situations. Children can raise their own questions. The material being organized can take the form of dialogue. It can also be contained in a film a demonstration or stories.

To facilitate both stability and meaning, one needs to create ideational linkage between the students' own cognitive structure and that of the discipline to be taught. Ausubel uses two principles to organize curriculum and instruction: progressive differentiation and integrative reconciliation. . Progressive differentiation refers to the most general ideas of the

discipline presented first followed by a gradual increase in details and specificity. When subject matter is programmed in accordance with the principle of progressive differentiation the most general and inclusive ideas of a discipline are presented first and progressively differentiated in terms of detail and specificity. This can occur in a number of ways. One of the most common forms of progressive differentiation is the breaking down of

superordinate into subordinate concepts. Another form of progressive differentiation involves the breaking of concept into its constituent parts. And a third form is the breaking down of broader generalization into more specific ones. This type can often involve the use of examples to illustrate the generalization being discussed.

Progressive differentiation is followed both in intra and inter unit planning. Each component unit has an organizer. In relation to each other, the units are progressively differentiated in descending order of inclusiveness so that each unit serves as an organizer for the one, which follow. Integrative reconciliation refers to the practice of interrelating or crossreferencing these units or ideas so that significant similarities and differences are recognized and real or apparent inconsistencies are reconciled Integrative reconciliation simply means that new ideas should be consciously related to previously learned content. The sequence of curriculum is organized so that each successive learning is carefully related to what has

been presented before. In integrative reconciliation, teacher attempts to make the logical

relationship between ideas in the developing schema apparent to students. Ausubel explained the purpose of integrative reconciliation as being "to explore relationships between ideas and to point out significant similarities and differences and to reconcile real or apparent inconsistencies" (1963). Another function of integrative reconciliation is to combat

compartmentalization. There are two types of integrative reconciliation – Vertical and

Horizontal reconciliation. Vertical reconciliation explores relationship between more and less abstract ideas and is designed to insure that new ideas between attached to old in a hierarchical fashion. Horizontal reconciliation investigates similarities and differences between coordinate concepts and other ideas at a similar level of abstraction.

By following these two principles, the subject matter is gradually built in the mind of the learner. If the entire learning material has been conceptualized and presented according to Progressive differentiation then Integrative reconciliation follows naturally. Progressive differentiation and Integrative reconciliation increase the stability and clarity of existing ideational anchorage and ensure discriminability of the learning task.

The heart of Ausubel's approach entails the use of Advance Organizers. Advance Organizers consist of introductory material presented ahead of learning task at a higher level of abstraction generality and inclusiveness than the learning task itself. The function of Advance

Organizers is to provide ideational scaffolding for the stable incorporation and retention of the more detailed and differentiated material that follows the learning passage as well as increase discriminability between the latter and related inferring concepts in the cognitive structure. Advance Organizer is an idea that can provide the learner with the conceptual framework on which he can hang the new material progressively from lesson to lesson. New Organizer relates the new material to ideas that have been presented previously. As these organizers accumulate they form in the learner's mind the information processing structure from the discipline. Thus by the end of series of units or activities the learner possesses a new

set of ideas. These will serve in the mind to keep the new material distinct and clear by providing ideational scaffolding to which the new ideas are attached and which may help to remember the new material. In addition, they provide ideas to which he can relate his present cognitive structure so that the new material can be integrated with the ideas that was previously using for processing information.

The organizer is important content in itself and needs to be taught. Time must be taken to explain and develop the organizer. Usually organizer is tied closely to the material it precedes. However the organizer can be conceptually distant in order to provide a new perspective. Advance Organizers are the result of a teacher's conscious attempt to

preview and structure the new material to be learned and to link it to content already existing in students pre-existing schemata. In a sense, Advance Organizers are like cognitive read maps, which allow seeing where they have been and where they are going. Effective Advance Organizers connect new information to existing schemata and provide students with a means to create new schemata. They are at a higher level of abstraction than the content they

organize and they subsume this information (Luiton, Ames, & Ackerson, 1980).

Ausubel describes two types of organizers and identifies their optimal applications. There are two types of organizers – Expository and Comparative. The organizers, which provide ideational anchorage, for completely unfamiliar material, are called expository organizers. This Advance Organizer strategy advocates those methods of presenting and ordering the

subject matter sequence that best enhance the clarity and stability of cognitive structure. This method follows the principle of Progressive differentiation and Integrative reconciliation. This will provide a holistic conceptual structure to which the learner can relate the new material. Expository Organizer provides a general subsumer for a new class, subclass

and species before more limited subsumers are provided for the particular subclasses or species. Expository Organizers are especially helpful because they provide ideational scaffolding for unfamiliar material. The organizer in this case provides ideational anchorage in terms that are already familiar to the learner.

Comparative Organizers are used most with relatively familiar material. They are designed to integrate new concepts with basically similar concepts existing in the cognitive structure; yet they are also designed to discriminate between the old and new concepts in order to prevent confusion caused by similarity. When relatively familiar material is being presented to the learner, Ausubel recommends a comparative organizer, which will help the learner

integrate new concepts with basically similar concepts in cognitive structure, which increase discriminability between new and existing ideas, which are essentially different but confusable.

The organizer has a higher level of abstraction generality and inclusiveness of the material and is selected on the basis of its suitability for explaining integrating and interrelating the material. An Organizer is a general idea which is fairly abstract, related to the material and which precedes the material. It functions cognitively to organize the material as it is presented. It provides a kind of conceptual framework into which the learner will integrate

the material. Thus Advance Organizers are statements, which are introduced in

advance of the learning material itself and are designed to help students learn and retain new material. The Advance Organizer links the new material to more abstract ideas, which already exist in the learners mind. In a review of research, Mayer (1984) listed a number of characteristics of Advance Organizers:

1 They are typically a short set of verbal or visual information

2. They are presented prior to learning a larger body of information

3. They contain no specific content from the new information to be learned

4. They provide a means of generating logical relationship in the new material

5. They influence the learners encoding process.

The exact form that an Advance Organizer takes is dependent upon

1. The nature of the learning material
2. The age of the learner
3. The degree of prior familiarity with the learning material

The essence of strategy rests on the Advance Organizer functioning as a conceptual linkage from material to the learner. If the student never receives or perceives the organizer the strategy is lost. Advance Organizer is the primary means of strengthening cognitive structure and enhancing retention of new information. The purpose of Advance Organizer is to explain, integrate and interrelate the material in the learning task with previously learned

material and also help to discriminate new material from previously learned material. The most effective organizer is that which uses concepts terms and proposition that are already familiar to the learner as well as appropriate illustrations and analogies.

In short it can be concluded that Advance Organizers are not reviewing of what was covered in the previous class, a simple overview, recalling what was done last week or last year, telling the students about tomorrow, recalling a personal experience and relating it to what will be learned or stating the objectives of the lesson. But Advance Organizers are organizational clues, tools that help to connect the known to the unknown, and frameworks for helping students understand study materials.

Goals of Advance Organizer Model

Ausubel's primary concern is to help teachers convey large amount of information as meaningfully and efficiently as possible. The Advance Organizer Model is designed to strengthen student's cognitive structures. Cognitive structure is the term used to represent a person's knowledge of particular subject matter at any given time and how well organized, clear and stable it is. Ausubel maintains that a person's existing cognitive structure is

the foremost factor deciding whether new material will be meaningful and how well it can be acquired or retained. Before presenting new material stability and clarity of prior knowledge should be increased. Strengthening student's cognitive structure in this way facilitates acquisition and retention of new information and is one of the model's primary goals.

In short, Advance Organizer Model strengthens Cognitive Structure and enhances retention of new information through Meaningful Assimilation of Information. This model helps in developing Interest in inquiry and Habit of Precise thinking.

Planning for Advance Organizer Model

In the planning phase the teacher has to create an Advance Organizer.In Ausubel's theory of meaningful verbal learning, an Advance Organizer is a statement preceding a lesson that is designed to preview the material to be learned and link it to content already existing in learner's schemata. It is more general and abstract than the content to be organized and subsumes the subsequent material. This organizer should be more general, abstract, and

inclusive than any of the succeeding material in the text.

In formulation and selection of Advance Organizer one needs to become very familiar with the subject area and conceptualize the discipline as a series of hierarchically organized concepts or propositions. Presentation of Advance Organizer is a distinct teaching episode apart from the usual introduction or transitions that take place in any teaching transaction.

Basically there are three types of organizers. –

Concept Definitions,Generalizations and Analogies.

Concept definition: Definition can be valuable organizers of content when the material is new or unfamiliar. Ideally, the defining statement should possess the characteristics of a good concept definition, in that it states the concept, the super ordinate concept and characteristics of the concept. The super ordinate concept helps link the concept to existing schemata, and the characteristics differentiate the concept from the other similar ones. The preparation of the organizer requires clear thinking on the part of the teacher. It is general, abstract and inclusive but does not include totally

unfamiliar language or ideas. Organizers that are too abstract or unfamiliar lose their ability to link the succeeding structure to the students existing schemata.

Generalization: Because of the student's ability to summarize large amounts of information, generalizations can also be effectively used as Advance Organizers. As with the use of definitions teachers must be certain that the students when using generalizations as Advance Organizers understand each of the concepts in the generalizations. If they are not, these concepts cannot serve as anchors for the new material or link to previously learned content. Thus generalizations could be used as an organizer to subsume narrower generalizations and anchor specific information. Analogy: The most effective type of the Advance Organizer is the analogy. Analogies work well because they can be customized to fit the

background of a particular student population. Analogies are useful in organizing school content. The value of an analogy as an Advance Organizer depends on two factors. The first is the familiarity of the analogous element to the students. The power of analogies comes from their ability to connect new ideas with old. If the old ideas are not clear, they cannot provide any firm points for connections. The second factor is the degree of overlap between

the analogy and the ideas to be taught. In all the analogies the new material is linked to something familiar to the student and the number of possible similarities between the two concepts being compared.

Implementation of Advance Organizer Model

David Ausubel is unusual among the educational theorist. First he directly addresses the goal of learning subject matter. Second he advocates the improvement of presentational method of teaching. Having prepared the

Advance Organizer and structured the content in the planning phase of the model, the lesson simply begins by displaying the Advance Organizer on the board or screen. The organizer serves as the lesson's focus and the point of reference for each of the subsequent ideas.

Syntax of Advance Organizer Model

Ausubel believed that learning proceeds in a top-down, or deductive manner. In a sequence of learning activities the first organizer and its material should be hierarchically more abstract than succeeding ones, which get more specific and elaborate than the original ones. The activities are designed to increase the clarity and stability of the new material so that fewer ideas are lost confused with one another or left vague. The students should operate on the material as they receive it by relating it with new learning material to personal experience and to their existing cognitive structure and by taking a critical stance towards knowledge. After that students try to gather the information, they and the teacher can ask questions to clarify ideas, add new cultural characteristics from information they found that does not fit the categories, make comparisons across groups, and apply them to new groups. Alternatively, the teacher could present information about a couple of example to develop the ideas further. In either case, the students now have an overall picture of culture that can help them organize information about new groups as they encounter them.

Ausubel's theory consists of three phases, presentation of an Advance Organizer, presentation of learning task or material, and strengthening the cognitive organization.

PHASE ONE

Here, Clarifying the aims of lesson is one way to obtain students attention and to orient them to their learning goals both of which are necessary to facilitate meaningful learning.

Advance Organizer is an idea in itself and like learning material it should be explored intellectually. Actual Advance Organizer is built around the major concepts and propositions of a discipline or area of study. The Advance Organizer has to be constructed so that the learner can perceive it for what it is. It is at a higher level of abstraction and generality than learning material. The essential features of concept or proposition must be pointed out and carefully explained. Teacher and student should explore the organizer by citing essential features, explaining them and providing examples. It should not be lengthy, but must be clearly understood and continually related to learning material to develop

integrative cognitive structure. It is especially important to prompt awareness of learner prior knowledge and experience that might be relevant to this learning task and organizer.

PHASE TWO

In this phase, Lectures, Discussions, Films, Experiments or Reading may provide the learning material, which is preceded in the first phase by the Advance Organizer. Maintain students' attention and make the organization of learning material explicit to the students so that they have an overall sense of direction.

PHASE THREE

New material in the students existing cognitive structure is anchored. Learning situation is more interactive in this phase. The successful acquisition of the material will depend on the learners desire to integrate it with prior knowledge on their critical faculty and on the teacher's presentation and organization of the material

Joyce and Weil summarize the basic procedure of the Syntax of Advance Organizer Model as follows

Phase One: Presentation of Advance Organizer

• Clarify aims of the lesson
• Present organizer:
o Identify defining attributes.
o Give examples or illustrations where appropriate.
o Provide context.
o Repeat.
o Prompt awareness of learner's relevant knowledge and experience.

Phase Two: Presentation of Learning Task or Material

• Present material.
• Make logical order of learning material explicit.
• Link material to organizer.

Phase Three: Strengthening Cognitive Organization

• Use principles of integrative reconciliation.
• Elicit critical approach to subject matter.
• Clarify ideas.
• Apply ideas actively (such as by testing them).

Principles of reaction

The teacher or the Instructional material controls the situation. The content has been selected for the learner, and the teacher should facilitate the discussion around the material at hand. In the flow of the lesson the training agent can function to point out the conceptual anchorages for the material and help learners see the relationship between the material that is being presented and the organizer. The teacher's solicited or unsolicited responses to the learner's reaction will be guided by the purpose of clarifying the meaning of the new learning material, differentiating it from and reconciling it with existing knowledge, making it personally relevant to the student and helping to promote a critical approach to knowledge. Ideally students will generate their own questions in response to their own drive for meaning.

Social system

The social system is a structured one. The teacher is the initiator and the controller of norms. Beyond the presentations of the organizer the learning situation assume a less structured posture and teacher and students can be very interactive. The teacher retains control of the intellectual structure, however as it is necessary to continuously relate the learning material to the organizer and to help students discriminate new material and differentiate it from previous materials.

Support system

Well-organized material is critical. The effectiveness of Advance Organizer depends on an integral relationship between the conceptual organizer and the rest of the content. The model provides guidelines for building or reorganizing Instructional materials.

Effects of Advance Organizer Model

Ausubel feels that the continuous use of inquiry-oriented strategies would be very inefficient because it would consume so much time and involve so many false steps. In addition, he feels that if learners are allowed to air their own ideas, many of those ideas will not be efficient. Therefore they will not get the power that is to be derived from the hierarchical structure ofdiscipline. As a consequence, he feels that much learning needs to be organized as reception-learning .He presents the arguments that the reception learning can be very meaningful and should not be confused with learning.

The Meaningful Reception Learning – the understanding and integration of new meaning into cognitive structure is the focal point of Ausubel's theory. Ausubel proposes supplementing meaningful reception learning with a critical approach to subject matter. Ausubel's method elicits the learner's active participation by requiring him to reformulate his own generalizations and integrate his knowledge in response to carefully programmed leading question. It is much more structured than discovery methods. As far as Piaget's theory of development is concerned, the children until ages 10 or 11 would not be able to handle the Ausubel strategy, because until those age the child is unable to reach the stage of abstract thinking which is essential to handle complex ideas.

Evaluation of effects of Advance Organizer Model

David Ausubel firmly believes in the importance of content goals. Asking the students to provide additional examples of the concept is a way for evaluating the acquisition of concepts through the model. Asking students for recognition or verbal recall of generalization is a method of evaluating the acquisition of generalization through the model. Use of generalization to solve a problem or to predict consequences is a significant mark of the attainment of objectives at the Knowledge and Comprehension as well as Application levels. The student's ability to remember or recall the relationship discussed in the class is a measure at the knowledge level. An alternative way of measuring student's knowledge of relationship is to ask them to identify, super-ordinate subordinate and coordinate relationship within the developed hierarchy. One way of evaluating student's understanding of relationship at a level higher than knowledge is to ask them to apply the information learned in class to a new situation. Another method of evaluating students understanding of relationship would be to ask the students to write a description of comparisonbetween concepts. The process skill that can be attained through Ausubel Model is that of organizing the unstructured information into a hierarchical structure. Attainment of their goal can be evaluated by testing skill in organization. This can be done by giving them with an unstructured list of Models of familiar concepts and asking them to develop an organized diagram of the related concepts.

Ausubel gives many emphases to Instructional and Nurturant effects of Advance Organizer Model. The Instructional value includes the idea themselves that are used as the organizer and information presented to the students. The ability to learn from reading, lectures, and other media used for presentation is another effect. Thus the Instructional effect is the conceptual structures and meaningful assimilation of information and ideas. The Nurturant effect includes interest in inquiry and precise habits of thinking. A hierarchical classification of behaviour belonging to the Instructional and Nurturant effect will help the user to, more clearly understand the effects of Advance Organizer Model and evaluate it. The classification of Instructional and Nurturant effect of Advance Organizer Model should be in tune with the educational, logical and psychological classification system.

CONCEPT ATTAINMENT MODEL

What is Concept Attainment?

Concept Attainment is an indirect instructional strategy that uses a structured inquiry process. It is based on the work of Jerome Bruner. In concept attainment, students figure out the attributes of a group or category that has already been formed by the teacher. To do so, students compare and

contrast examples that contain the attributes of the concept with examples that do not contain those attributes. They then separate them into two groups. Concept attainment, then, is the search for and identification of attributes that can be used to distinguish examples of a given group or category from non-examples.

What is its purpose?

Concept attainment is designed to clarify ideas and to introduce aspects of content. It engages students into formulating a concept through the use of illustrations, word cards or specimens called examples. Students who catch onto the idea before others are able to resolve the concept and then are invited to suggest their own examples, while other students are still trying to form the concept. For this reason, concept attainment is well suited to classroom use because all thinking abilities can be challenged throughout the activity. With experience, children become skilled at identifying relationships in the word cards or specimens. With carefully chosen examples, it is possible to use concept attainment to teach almost any concept in all subjects.

Advantages:

- helps make connections between what students know and what they will be learning
- learn how to examine a concept from a number of perspectives
- learn how to sort out relevant information
- extends their knowledge of a concept by classifying more than one example of that concept
- students go beyond merely associating a key term with a definition concept is learned more thoroughly and retention is improved

How do I do it?

Steps of Concept Attainment:

1. Select and define a concept
2. Select the attributes
3. Develop positive and negative examples
4. Introduce the process to the students
5. Present the examples and list the attributes
6. Develop a concept definition
7. Give additional examples
8. Discuss the process with the class
9. Evaluate

A Math example:

- First the teacher chooses a concept to developed. (i.e. Math facts that equal 10)
- Begin by making list of both positive "yes" and negative " no" examples: The examples are put onto sheets of paper or flash cards.
- Positive Examples: (Positive examples contain attributes of the concept to be taught) i.e. 5+5, 11-1, 10X1, 3+4+4, 12-2, 15-5, (4X2)+2, 9+1
- Negative Examples: (for examples choose facts that do not have 10 as the answer) i.e. 6+6, 3+3, 12-4, 3X3, 4X4, 16-5, 6X2, 3+4+6, 2+(2X3), 16-10
- Designate one area of the chalkboard for the positive examples and one area for negative examples. A chart could be set up at the front of the room with two columns - one marked YES and the other marked NO.
- Present the first card by saying, "This is a YES." Place it under the appropriate column. i.e. 5+5 is a YES
- Present the next card and say, "This is a NO." Place it under the NO column. i.e. 6+6 is a NO
- Repeat this process until there are three examples under each column.
- Ask the class to look at the three examples under the YES column and discuss how they are alike. (i.e. 5+5, 11-1, 2X5) Ask "What do they have in common?"
- For the next tree examples under each column, ask the students to decide if the examples go under YES or NO.

- At this point, there are 6 examples under each column. Several students will have identified the concept but it is important that they not tell it out loud to the class. They can however**show** that they have caught on by giving an example of their own for each column. At this point, the examples are student-generated. Ask the class if anyone else has the concept in mind. Students who have not yet defined the concept are still busy trying to see the similarities of the YES examples. Place at least three more examples under each column that are student-generated.
- Discuss the process with the class. Once most students have caught on, they can define the concept. Once they have pointed out that everything under the YES column has an answer of 10, then print a new heading at the top of the column (10 Facts). The print a new heading for the NO column (Not 10 Facts).

How can I adapt it?

This activity can be done on the chalkboard, chart paper or overhead projector to a large or small group. It also works well as one-on-one work. Rather than starting with the teacher's concept, use a student's concept. Concept attainment can be used to introduce or conclude a unit of study.

Variations on the Concept Attainment Model

- Present all of the positive examples to the students at once and have them determine the essential attributes.
- Present all of the positive and negative examples to the students without labeling them as such. Have them group the examples into the two categories and determine the essential attributes.
- Have the students define, identify the essential attributes of, and choose positive examples for a concept already learned in class.
- Use the model as a group activity.

Assessment and Evaluation Considerations

Have the students:

- write the definition from memory.
- determine positive and negative examples from a given group.
- create their own examples of the concept.
- "think aloud"
- write a learning log
- do an oral presentation
- create a web, concept map, flow chart, illustrations, KWL chart, T chart
- Method of teacher controlled instruction

UNIT II : INSTRUCTIONAL STRATEGIES

TOPIC 1 : TEACHER CONTROLLED INSTRUCTION (TCI)

The teacher controlled instruction strategy is highly teacher-directed and is among the most commonly used. This strategy is effective for providing information or developing step-by-step skills. It also works well for introducing other teaching methods, or actively involving students in knowledge construction.

Method of teacher controlled instruction

1. Structured Overview

Structured Overview is verbal, visual or written summary or outline of a topic. It can occur at the beginning of a unit, module or new concept, or it may be used to help relate a learned idea to the big

picture. A Structured Overview distills difficult or complex idea into simple definitions or explanation, and then shows how all the information relates. It is the process of "organizing and arranging topics" to make them more meaningful.

What is its purpose?

The purpose of a Structured Overview is to help students place new ideas in context. Because ideas are simplified, it is easier for students to see "the big picture". In addition, connecting new ideas to information students already understand makes it easier to retain.

How can one do it?

There are three main ways in which Structured overview can be used. One is verbal summary at the start of a new concept. The teacher starts by highlighting the new ideas to be learned in a few simple sentences. Then the relationship between these ideas and the ones the students already know is discussed. The structured overview takes the role of an advanced organizer. Another type of Structured Overview is a written summary. The approach is the same as the verbal summary, but students have a written record of the ideas. Generally a combination of verbal and written Structured Overview is more effective than either type alone. The final method is a visual Structured Overview. Venn diagrams of concepts, semantic maps, semantic organizers, webs, and charts are all methods visual Structured Overview. When accompanied by explanation, visual overviews are often very effective at helping student connect ideas.

How can one adapt it?

A Visual Structured Overview can be a very strong tool for students who are struggling with the content of a subject. While it is used at the beginning or end of a group of lessons with most students, it can be used more frequently if necessary. Students who refer to a structured overview more frequently are better able to articulate higher levels of learning than students who do not. When students struggle with a subject, the repeated use of a visual Structured Overview can have a strong positive effect on learning outcomes

2. Lecture

Lecture is a valuable part of a teacher's instructional repertoire if it is not used when other methods would be more effective. If the presenter is knowledgeable, perceptive, engaging, and motivating, then lecture can stimulate reflection, challenge the imagination, and develop curiosity and a sense of inquiry. Criteria for the selection of the lecture method should include the types of experiences students will be afforded and the kinds of learning outcomes expected. Because lecture is teacher-centred and student activity is mainly passive, the attention span of students may be limited. Many students, because of learning style preferences, may not readily assimilate lecture content. In addition, lectured content is often rapidly forgotten.

3 .**Explicit Teaching**

Explicit teaching involves directing student attention toward specific learning in a highly structured environment. It is teaching that is focused on producing specific learning outcomes.

Topics and contents are broken down into small parts and taught individually. It involves explanation, demonstration and practise. Children are provided with guidance and structured frameworks. Topics are taught in a logical order and directed by the teacher.

Another important characteristic of explicit teaching involves modeling skills and behaviours and modeling thinking. This involves the teacher thinking out loud when working through problems and demonstrating processes for students. The attention of students is important and listening and observation are key to success.

What is its purpose?

Explicit teaching is useful for introducing topics and specific skills. It provides guided instruction in the basic understanding of required skills, which studentscanthen build on through practice, collaboration, repetition, hands on activities and developmental play.

How do one do it?

Explicit instruction is a sequence of supports:

1. setting a purpose for learning
2. telling students what to do
3. showing them how to do it
4. guiding their hands-on application of the new learning.

Explicit instruction begins with **setting the stage for learning**, followed by a clear **explanation** of what to do (telling), followed by**modeling** of the process (showing), followed by multiple opportunities for **practice** (guiding) until independence is attained. Explicit instruction moves systematically from extensive teacher input and little student responsibility initially — to total student responsibility and minimal teacher involvement at the conclusion of the learning cycle.

4 .**Drill & Practice**

As an instructional strategy, drill & practice is familiar to all educators. It "promotes the acquisition of knowledge or skill through repetitive practice." It refers to small tasks such as the memorization of spelling or vocabulary words, or the practicing of arithmetic facts and may also be found in more sophicated learning tasks or physical education games and sports. Drill-and-practice, like memorization, involves repetition of specific skills, such as addition and subtraction, or spelling. To be meaningful to learners, the skills built through drill-and-practice should become the building blocks for more meaningful learning.

What is its purpose?

Drill and Practice activities help learners master materials at their own pace. Drills are usually repetitive and are used as a reinforcement tool. Effective use of drill and practice depends on the recognition of the type of skill being developed, and the use of appropriate strategies to develop these competencies. There is a place for drill and practice mainly for the beginning learner or for students who are experiencing learning problems. Its use, however, should be kept to situations where the teacher is certain that it is the most appropriate form of instruction.

How can one do it?

Drill and practice software packages offer structured reinforcement of previously learned concepts. They are based on question and answer interactions and should give the student appropriate feedback. Drill and practice packages may use games to increase motivation. Teachers who use computers to provide drill and practice in basic skills promote learning because drill and practice increases student acquisition of basic skills. In a typical software package of this type, the student is able to select an appropriate level of difficulty at which questions about specific content materials are set. In most cases the student is motivated to answer these questions quickly and accurately by the inclusion of a gaming scenario, as well as colourful and animated graphics. Good drill and practice software provides feedback to students, explains how to get the correct answer, and contains a management system to keep track of student progress.

How can one adapt it?

There has been a definite move away from paper-based drill and practice systems to computer-based systems. Drill and practice exercises with appropriate software can enhance the daily classroom experience. Given the personalized, interactive nature of most software, the computer can lend itself to providing extended, programmed practice. Used in small doses, electronic learning experiences can supplement any lesson effectively. Certain software allow students to reinforce specific skills in a certain subject area. Although not as easily integrated across the curriculum, drill and practice software can be useful. It usually comes in one of two formats. The first focuses on a specific subject area or a part of that area. The most common areas are reading and math. The second type attempts to

improve skills in several areas of the curriculum. As with all other types of software, the teacher needs to determine if technology is the best way to work with the subject matter being dealt with.
Games provide child centered activities to apply problem solving strategies as well as an opportunity to practice basic skills.
Basic Skills Practice Cards can be designed to be used in many different formats. They can be used with a game board, in a lotto format or as flashcards.

5 . Compare & Contrast
Compare and Contrast is used to highlight similarities and differences between to things. It is a process where the act of classification is practiced. It is effectively used in conjunction with indirect instructional methods, but can also be used directly to teach vocabulary signals, classification, nomenclature and key characteristics. It is often presented in either written text paragraphs or a chart. Its most common use is as a graphic organizer of content.
What is its purpose?
Compare and Contrast is used to help students distinguish between types of ideas or group like ideas. It can be used to help students identify language cues, clarify thinking and define ideas. It can also be used to facilitate indirect instruction through concept formation or concept attainment.
How can one do it?
The most common form of comparison and contrast is a chart. The paper is divided down the middle and the two columns have specific functions. The comparison side is used to list similarities between two things, and the differences are listed in the contrast column. The student typically completes the chart after a form of direct instruction such as reading, listening or viewing. Following the completion of the chart, some form of debriefing is used to help student make generalizations based on the items that fall into each category or column. This debriefing might be discussion, journaling, or any other form of reflective thinking.
How can ONE adapt it?
Comparison and contrast is a useful method for improving reading skills and listening skills. When students are struggling with finding meaning in either the spoken or written word, a comparison and contrast for specific language tools is a powerful tool. Specific words signal comparative ideas in language. For example in comparison, at the same time, or similarly signal sameness and on the other hand, but, nevertheless yet, however, and in contrast show that things are in opposition. Students can be given a list of words and then use them as cues to pull ideas out a passage. This is a decoding tool that can be adapted across grade and subject.

6.Didactic Questions
Didactic questioning offers the teacher a way to structure the learning process (McNeil & Wiles, 1990). Didactic questions tend to be convergent, factual, and often begin with "what," "where," "when," and "how." They can be effectively used to diagnose recall and comprehension skills, to draw on prior learning experiences, to determine the extent to which lesson objectives were achieved, to provide practice, and to aid retention of information or processes. Teachers should remember that didactic questions can be simplistic, can encourage guessing, and can discourage insightful answers or creativity. However, effectiveness of this method can be increased by the appropriate addition of "why" questions, and the occasional use of "what if" questions.

TOPIC : 2 LEARNER CONTROLLED INSTRUCTION
Learner-controlled instruction is different from the "independent study" that you experienced when you were back in school. And not only because it's delivered on a computer rather than on a paper media. Today, learner-controlled instruction is used as pre-work or for initial skill building before the

learner heads into a learning laboratory. Then Managers act as a coach, guiding the learner through on-job activities that make their new skills operational.

By using technology to deliver the basics, training budgets can be used more effectively. Some multimedia training delivered on computers is excellent. But all too often, flashy computer-based training can disguise mediocre content that's based on outmoded instructional principles. It's no match for an old-fashioned "pencil-and-paper" program that's based on sound instructional design and modern adult learning theory. We specialize in ensuring sound instruction for both paper and computer medias

Learner-controlled instruction (LCI provides a model for developing the self-directed learners modern society requires. LCI allows the student to specify goals, to control significant resources to attain them, and to choose learning strategies, thus enabling him to learn how to learn. It appears that the environment needed to support this model must rely heavily upon computer-assisted instruction (CAI) and computer-managed instruction (CMI). Time-shared terminals and sophisticated hardware are required, and it is necessary to reorganize content fields for learner-controlled manipulations. Additionally, research needs to identify those who are unlikely to succeed in LCI, to discover how to remedy this problem, and to determine how to structure CAI so that it equalizes the achievements of poorer students without penalizing the better ones, rather than merely amplifying the advantages of the gifted. The TICCIT system at Brigham Young University is being used to field test an LCI program in which learners control the pace, sequence, and mode of instruction, specify the depth and detail of instructional interaction, and determine access to support facilities and advice. Evaluation after two years will determine the success of the system in making operational the theoretical model.

Media instruction has always been a designers' medium. That was true with videotape, interactive laser videodisc, DVDs and CD-ROMs. And, so it is today with online learning.

In fact, the only applicable phrase for effective E-Learning instruction — "instructional integrity" — does not belong to the new Merlins with their magic technology. That phrase is the province of flesh and blood human beings — the instructional designers of yesterday, today, and tomorrow.

Media instruction has never been an evolving electronic gadgetry world. It is rather one more step in a natural historical chain that has led us from Socrates and Plato to the E-Learning world of today.

E-Learning and multiple-media instruction is part of the informational and instructional evolutionary process that has taken us beyond storytelling, the printing press, and radio wave transmission. It is a communication tool. It makes possible more efficient information transfer and more effective learning.

Who then, among us, must we look to — to lead us forward? Certainly not the manufacturers of technology platforms. By their very nature, they must remain "box sellers." Gutenberg spent his adult life perfecting a machine that was instrumental in bringing knowledge to the world he knew. His contemporaries owed him a great debt. But, knowledge was attained only through the conceptual transfer that took place between the printed words of an author and the eyes and minds of that author's readers.

So it is today with E-Learning. The promise of E-Learning will only be attained when the applications designer can effectively communicate with the users' senses — be they sight, sound, and/or touch. The human animal remains a sense-taught creature. And, E-Learning, along with the newest "Games/Simulations" technologies, provides the best artificial platform available today for stimulating the senses of a learner.

Not everyone can be an effective E-Learning designer. In fact, very few can. But, the few that can should lead us. Those few will show us how to use the new E-Learning technologies for better education and training. Some will build effective commercial programs. Some will build effective custom application programs. But, the few that can will build those education and training applications around one basic tenet: learner-controlled instruction, based on full motion video or animation plus optional word-for-word audio control.

We must guard ourselves against infatuation. All the new technologies hold promise. All can be effective tools, but none of them are answers. The answers of this new decade will come from an emerging breed of "authors" and "artists." Those who know that training and education are irrevocably linked today — linked by the necessity of transferring control to the learner

TOPIC : 3 SELF LEARNING

SELF LEARNING refers to the range of instructional methods which are purposefully provided to foster the development of individual student initiative, self-reliance, and self-improvement. While independent study may be initiated by student or teacher, the focus here will be on planned independent study by students under the guidance or supervision of a classroom teacher. In addition, independent study can include learning in partnership with another individual or as part of a small group.

Self-learning can refer to:

- Learning Theory

Learning theories are conceptual frameworks that describe how information is absorbed, processed, and retained during learning. Cognitive, emotional, and environmental influences, as well as prior experience, all play a part in how understanding, or a world view, is acquired or changed, and knowledge and skills retained.[1][2]

Behaviorists look at learning as an aspect of conditioning and will advocate a system of rewards and targets in education. Educators who embracecognitive theory believe that the definition of learning as a change in behavior is too narrow and prefer to study the learner rather than her environment, and in particular the complexities of human memory. Those who advocate constructivism believe that a learner's ability to learn relies to a large extent on what he already knows and understands, and that the acquisition of knowledge should be an individually tailored process of construction.Transformative learning theory focuses upon the often-necessary change that is required in a learner's preconceptions and world view.

Outside the realm of educational psychology, techniques to directly observe the functioning of the brain during the learning process, such as event-related potential and functional magnetic resonance imaging, are used in educational neuroscience. As of 2012, such studies are beginning to support a theory of multiple intelligences, where learning is seen as the interaction between dozens of different functional areas in the brain, each with their own individual strengths and weaknesses in any particular human learner.

- Autodidacticism

Autodidacticism (also **autodidactism**) is self-directed learning that is related to but different from informal learning. In a sense, autodidacticism is "learning on your own" or "by yourself", and an **autodidact** is a self-teacher. Autodidacticism is a contemplative, absorptive procession. Some autodidacts spend a great deal of time reviewing the resources of libraries and educational websites. One may become an autodidact at nearly any point in one's life. While some may have been informed in a conventional manner in a particular field, they may choose to inform themselves in other, often unrelated areas. Many notable contributions have been made by autodidacts.

Autodidactism is only one facet of learning, and is usually, but not necessarily, complemented by learning in formal and informal spaces: from classrooms to other social settings. Many autodidacts seek instruction and guidance from experts, friends, teachers, parents, siblings, and community. Inquiry into autodidacticism has implications for learning theory, educational research, educational philosophy and educational psychology.

- **unsupervised machine learning**

In machine learning, **unsupervised learning** refers to the problem of trying to find hidden structure in unlabeled data. Since the examples given to the learner are unlabeled, there is no error or reward signal to evaluate a potential solution. This distinguishes unsupervised learning from supervised learning and reinforcement learning.
Unsupervised learning is closely related to the problem of density estimation in statistics.[1] However unsupervised learning also encompasses many other techniques that seek to summarize and explain key features of the data. Many methods employed in unsupervised learning are based on data mining methods used to preprocess[*citation needed*] data.
Approaches to unsupervised learning include:

- clustering (e.g., k-means, mixture models, hierarchical clustering),
- blind signal separation using feature extraction techniques for dimensionality reduction (e.g., Principal component analysis, Independent component analysis, Non-negative matrix factorization, Singular value decomposition). [2]

Among neural network models, the self-organizing map (SOM) and adaptive resonance theory (ART) are commonly used unsupervised learning algorithms. The SOM is a topographic organization in which nearby locations in the map represent inputs with similar properties. The ART model allows the number of clusters to vary with problem size and lets the user control the degree of similarity between members of the same clusters by means of a user-defined constant called the vigilance parameter. ART networks are also used for many pattern recognition tasks, such as automatic target recognition and seismic signal processing. The first version of ART was "ART1", developed by Carpenter and Grossberg

TOPIC 4 : SELF INSTRUCTIONAL PRINT MATERIAL
Print as a medium for transmitting information has been the most important component in learning. It has been so even in the case of distance education. It is because print medium is adaptable to many different learning environments. It is economical and it has traditionally been used for pedagogical purposes.
Printed material is prime medium for distance teaching. Most of distance education institutions rely on printed material complemented or supplemented by other media.
There are various types of media, which are used in distance teaching. These may be classified into two categories:
1.Print Instructional Media, and
2.Non-print Instruction Media.
The print instructional media is used in correspondence-education or postal-education. The printed matter and lessons are sent to the students through postal services.

CHARACTERISTICS OF SELF-INSTRUCTIONAL MATERIALS
As a teacher, trainer, and line manager or as a learner everyone must have used self-instructional material in open, distance or flexible learning contexts. In primary school it may have involved you giving children a work card in arithmetic to complete, a tactile puzzle to solve or directions to follow in playing a game. In secondary school you may have provided directions to conduct an experiment, data to solve a problem or guidelines to undertake project work. In further education & training you may have prepared materials to stimulate fault diagnosis or used multimedia & computer based packages to provide a resource for your teaching. At its simplest you may have given learners a technical report, blueprint, circuit diagram or extract to study together with a series of questions to

answer. You may have followed the manufacturers instructions to assemble DIY furniture, programme the time control on the central heating or cooker-with different degrees of success! All of the above could constitute self-instructional material.
If you were involved in producing self-instructional material it would be worth considering what features of these materials you currently exploit plan. If you are planning to be involved you could consider what feature you could incorporate and thus maximize the effectiveness of your teaching.

DISTINCTIVE FEATURES OF SELF INSTRUCTIONAL MATERIAL
The first paragraph shows that in how many ways the self instructional material can be used in different contexts, whether be it financial, industrial or educational environment.
Q. What is the distinctive feature of the self-instructional material?
Some of the features are,

- Self-paced learning: each individual can work at his/her own pace rather than the pace of the group, which can be too fast or too slow.
- Private learning: no danger of loss of face as it might be feared in certain kinds of group studies.
- Available at any time: learners can learn when they wish rather than according to external timetable.
- Available at any place: in students home or while travelling also unless any fixed or special equipment is required.
- Available to any numbers: it is available to any no. of learners studying same course at one time.
- Standardized content: learners receive the same teaching.

Standardized Content:

Learners deserve the best teaching and training material that we can provide; materials that are not affected by the particular preferences of the teacher or trainer. A feature of the self-instructional material is that it enables all learners to receive same teaching material. Furthermore, since the materials are available to others for scrutiny it is possible that the current thinking and arguments are possible to be central-rather than personal views of the author.
In large institutions it is not unusual for the learners to be taught by two or more trainers/teachers-each followings same book or syllabus or scheme of work, however an independent observer would be excused if they judged that two different courses were being taught! Indeed if a same person conducts two classes the difference in presentations is likely to be significant.

Expert Contents:

You may or may not be the expert in your field, however it is the distinctive feature of the self-instructional material that you can include excerpts from the national and the international experts. An obvious way is to publish existing teaching material in your teaching making sure that you don't infringe with the copyrights. These may represent a degree of writings and presentations you cannot improve upon. You can even record a debate with a colleague on the topic on a tape or record a videotape for the learners of the places it would be impossible for the

learners to visit, or they can take part in online discussions with the experts or other learners via computer mediated link (CMC).

Of course you don't have to completely agree with the theories, modules put forward by these experts. Indeed you may wish to compare and contrast these views-presenting them to learners and inviting the learners to make up their own mind.

Structured Teaching:

If you ask a dozen specialists to formulate a material on doing a particular thing you would particularly find a dozen ways of doing it. Some would take longer than others to study some would stress on one element rather than the other and some would consume more resources than the other.
Of course the teachers are expected to provide the briefest of outline for a particular case of study. It is often the list of topics supplemented by two or three sentences. What is more, detailed structure or overview of the material is provided in the course publicity material. A distinctive feature of self-instructional material is that the teaching structure and sequence is made explicit. Preliminary documents often an introduction and guide provide the general structure of the course, while preliminary pages in each module indicate the structure and sequence of teaching material-and alternate ways through it. If the material is devised by two or more authors or it has the advice of other people it reflects their consensus and is the most effective way of teaching the topic.

DIFFERENCES BETWEEN TEXTBOOKS AND SELF INSTRUCTIONAL MATERIAL:
Everyone must be familiar with written technical reports, textbooks, chapters, academic results rather than self-instructional materials.
The main difference between textbooks and self-instruction materials is that textbooks assume interest while self-instructional material arouses interest.
As if the learner is not interested why would he purchase the material and sit down to read it. A typical self-instructional material should prompt, question, and encourage the matter of the material.

TEXTBOOKS

1) Amuses interest.
2) Written for both teachers and learner use
3) No estimation of study time
4) Designed for all
5) Aims and objectives are not specified
6) Only one way through it
7) Structured according to needs of both learner and teacher
8)Does not consider potential difficulties
9) Summaries are not always provided
10) General style
11) Content packed
12) Less open layout
13) Learner evaluation not always conducted
14) Does not provide any study skill advice
15) Active response is not required

16) Aims at successful teaching

SELF INSTRUCTIONAL MATERIALS

1.Arouses interest
2.Written for learner use
3.Gives estimate of study time
4.Designed for particular audience
5.Always gives aims and objectives
6.May be many ways through it
7.Structured according to needs of learner
8.Major emphasis on self-assessment
9.Alert to potential difficulties
10.Always offers summaries
11.Personal style
12.Content unpacked
13.More open layout
14.Learner evaluation always conducted
15.Provides study skills advice
16.Requires active response
17.Aims at successful learning

SELF – LEARNING

Self-learning is developed when teaching methods meant for all members of a group- failed to meet the varying needs of individual students. The most common description of self-learning methods is that teaching is directed towards individual students rather than the group of students.

CONCEPT:

¬ The learner takes up the responsibility for his\her learning.
¬ Emphases on learning rather than teaching.
¬ Teacher role becomes more of a manager, a facilitator or a guide.
¬ Learner - controlled instruction includes a no. of techniques, which range from the simple assignment to the most sophisticated computer- assisted instruction.

¬ Human beings learn many things from their own efforts. Every individual has natural desire to learn on his\her own
¬Every individual is unique. Everybody learns according to his or her abilities.
¬ Any teaching system based on presentation of information to a group can't take into account the wide variation in the rates at which individual students learns.
¬ As the students entering secondary education vary in their abilities, interests & needs, there is a pressing need for a wide range of instruction. Individualized instruction is the only panacea for such needs.
¬ In essence, the auto instructional method promotes the orderly & controlled development of an individual's skill in much the same way as a good tutor might do.

¬ It gives the student greater importance & role in the teaching learning activity.
¬ It lays stress on individualised learning or self-learning.
¬ It requires careful monitoring of students working on their own or in small groups on practice a new skill.
¬ It Demands your active participation in teaching-learning work.
¬ Instructional system that is more controlled by the learner results in learner- controlled instruction whereas Teacher controlled instructional methods are lecture, demonstration, and team teaching activity-based instruction
¬ Emphasis on learning rather than teaching
¬ Recognition of individual differences
¬ Active student participation
¬ Working at one's own pace
¬ Self-pacing,
¬ Provision of feedback and evaluation.

MISCONCEPTION:

Self-learning is not synonymous with independent learning or learning in isolation from other students. Self-learning may encourage independence from the teacher; this, however, is not usually the main aim. During self-learning, the students do not necessarily work in isolation from their peers.

ADVANTAGES OF SELF-LEARNING:

¬ The students learn more effectively when they learn on their own. Self-learning develops critical thinking in handling of study materials on one's own and enhances communicative skills and self-reliance.
¬ Self-learning prepares the student to face the problems in his\her real life.
¬ Learning on one's own is more enjoyable, exciting and rewarding.
¬ Self-learning promotes self-discipline in the students.

All classrooms techniques have certain disadvantages in common. Some are given below: -
¬ Students are not instructed individually.
¬ One student may be entirely passive, another active.
¬ Careful organisation of material is ineffective when the student is inattentive & passive.
¬ Although a student may be responding to the material that is presented. He does not receive immediate information about the correctness of his response nor is he able to proceed at his own rate.

SELF INSTRUCTIONAL METHODS:

There are two main categories of self-instructional method:
-More structured
-Less structured.

Under more structured methods:
- Programmed learning
- Personalized system of instruction (PSI)
-Computer - assisted instruction (CAI).

TOPIC 6 : KELLER'S PLAN

The **Keller Plan**, also called the **Personalized System of Instruction** (PSI), was developed by Fred S. Keller with J. Gilmour Sherman, Carolina Bori, and RodolphoAzzi in the middle 1960s as an innovative method of instruction for the then-new University of Brasília. PSI was conceived of as an application of Skinner's theories of learning, grounded in operant conditioning strategies of behaviorism.

Principles

Keller argued that effective instruction should incorporate five principles, the essential elements of the Keller Plan:

- Written materials—The primary presentation of new content should be through written texts. Given the forms of media available at the time when the Keller Plan was developed (e.g., lectures, movies, audio records, television, radio, paper-based text, etc.), paper-based texts gave students the greatest freedom; books and texts are portable, can be read at one's own pace, can be started and stopped at any time, can be easily reviewed, and can be marked by the reader. As an application of behaviorism, the Keller Plan was meant to maximize the number of operant behaviors that could be reinforced; this could best be done with written materials rather than have the learner be a passive observer of other media. Digital media available today could provide the same kinds of learner control and presumably could be incorporated in a contemporary implementation of PSI.
- Units of content—Subject matter material should be broken down into separable, meaningful units. These units could have various kinds of relationships; for example, one could provide prerequisites for understanding a second, or the second could provide deeper elaboration of a proceeding unit. In any case, specific learning objectives should be definable for each discrete unit of content.
- Self-paced instruction—Students should be allowed to advance through the course material at their own pace. While an instructor might specify the order in which learning units are completed, the learners should decide when and at what rate they learn. Learners could move through a course as quickly or slowly as they choose.
- Unit mastery—Students must satisfy a mastery requirement in one unit before proceeding to the next. Typically, a unit in PSI would have more than one equivalent form of assessment—for example, three quizzes of equal difficulty or three primary sources or data sets to be analyzed. Students must demonstrate master of a unit's objectives to a certain level of quality. If the student does not reach the threshold, they are redirected to unit materials (or supplements if provided) and then take an equivalent form of the unit assessment. From the point of view of behaviorism, demonstrating mastery and being allowed to continue to a subsequent unit was presumed to be reinforcing
- Proctors—Human proctors are an important part of the Keller Plan. The proctors could be "external" to the course (adults or peers brought to the course from external sources) or "internal" (advanced students in the course who are doing well, have completed all units to date, and have good interpersonal skills). Proctors were the arbiters of unit mastery; they would "certify" mastery, discuss areas of weakness, and direct students to the next units. Behaviorists were always concerned about bringing conditioned behaviors under the control of "natural" reinforcers; interactions with the proctors were presumed to provide natural social reinforcers that encouraged learning behaviors and perseverance in the course.

Application

The Keller Plan has mainly found been used in higher education, particularly as a more personalized form of instruction in large classes, but there is nothing inherent in Keller's formulation to restrict its application to particular grade levels, content, or types of courses. There has been a good deal of research on the effectiveness of PSI which indicated that it had robust, significantly positive on learning when compared to more traditional lecture-based formats.

TOPIC : 7 COMPUTER ASSISTED INSTRUCTION

Computer-assisted instruction (CAI) represents a teaching tool that involves the use of a computer program or programs to facilitate the education of a group of students. Its major goal is to provide practical instruction through interactive programs that teach effectively. The method was first introduced in the 1960s. Since then it has evolved so that in the twenty-first century computers are an integral part of the education process in the developed countries.

Even though there are many types of educational computer use, not all are defined as CAI. This term generally refers to educational activities, in which a computer program is used to teach a passive student, or to such courses in which the computer acts as a platform for the creation of a personalized and interactive learning environment. CAI can be used alone or in combination with other teaching methods. According to certain studies, the combination of CAI and teacher-assisted instruction (TAI) is highly effective in bolstering students' achievements.

CAI can be applied to all ages and forms of educations, from preschool to professional school and even in many employment areas. It can be used in a wide range of fields, including all the main disciplines in elementary and secondary school. CAI is also applied in the training of nurses, jet engine mechanics, food service workers, law students and many more. It can assist with the teaching of people with physical limitations, learning disabilities and language limitations.

As the use of CAI varies depending on the target group and subject, CAI programs never follow a single theoretical model of instruction. In many of them the instruction is organized as interaction between a student and a teacher. Other programs seek to create an engaging and motivating environment in a drive to encourage the learning process.

CAI programs are developed to offer a specific kind of student interaction with the computer screen. For CAI developers the computer screen represents a programmable interactive communications medium. As these programs seek to address the needs of a particular group of students, their developers aim to create a program that would teach effectively and feature all the available experience and expertise. Each CAI program is tailored for a specific domain, topic and group of students.

One of CAI's key objectives is to provide a rich diversity of environments and problems. To achieve that the programs developed for a single course may differ drastically in their goals, tasks and style. Due to the work's complexity, CAI program developers are required to have significant experience in the computer medium.

There are several aspects of CAI that facilitate learning. These include the ability to personalize information; the presence of animating objects on the screen; the available practice activities that incorporate challenges and curiosity and the fact that it provides a fantasy context and gives the learner a choice over their own learning process.

The advantage of personalizing information is that it boosts the students' interest in a given task. It is easier for a person to integrate new information if his or her name or some other familiar contexts appear in a problem. This is especially true when talking about teaching children and young people.

The animation of objects that are part of the explanation of a concept scales down the cognitive load on one's memory and thus facilitates learning. This feature of CAI is especially helpful when dealing with natural sciences such as physics. It allows the student to perform search and recognition processes and to make more informational relationships.

CAI lifts up the student's motivation as it provides him or her with a more challenging and stimulating context than conventional teaching methods. Increased motivation may lead to personal satisfaction and the feeling of challenge. It can also create a positive perspective on lifelong leaning.

Using computers in the education process provides a fantasy context that serves to facilitate engagement. According to Greta G. Fein and Jerome L. Singer who studied the effect of play on children's education, the involvement in fantasy as a whole is highly intrinsically motivating.

Another thing that bolsters one's motivation when using CAI is the presence of choice. When a student can control instruction and make choices, he or she gets more motivated, which enhances the learning process. At the same time, the lack of choice in instruction that is not controlled by the learner may have a negative impact on learning. Having control over the process and making choices makes the student feel more competent and self-determined.

TOPIC 8 : GROUP CONTROLLED INSTRUCTION

The use of small groups for instructional purposes is widely practiced in a variety of contexts, ranging from conventional educational institutions to the armed forces and training within business and industry. However, despite this wide usage, concrete information and practical guidance concerning instructional methods suitable for use with small groups have been difficult or impossible to find. The purpose of this volume is to provide such information and guidance.

Contents.

The Small Group Rationale. The fundamental goal of every instructor is to create a conducive learning environment. Small-group methods of instruction are one approach to the creation of such an environment.

Regardless of the particular method used, the rationale for small group instruction rests upon the premise that learning is partly a function of attitudes, and education or training is a matter of overcoming resistance to change. This can be accomplished by discussing issues or problems and, in some instances, arriving at decisions about how they might be handled. Because the group resolves problems with each student participating, members are committed to solutions through the functioning of group norms endorsing the new ideas or behaviors. Under this rationale, two purposes are assumed to be accomplished: (a) students get new insights into problems by hearing different viewpoints and by having their ideas critiqued, and (b) they learn and commit to new behaviors from group discussion and decision.

For maximum learning to occur, a group must possess a common goal for learning, a reasonable degree of cohesiveness, norms conducive to learning, and patterns of effective communication - in effect, a learning culture. In permanently structured groups, these ingredients may already be present. However, in most instructional situations, where students usually meet for short periods spread over weeks or months, instructors must create and develop the required structure and processes of the group. The various methods used in small-group instruction are devices for accomplishing these purposes.

CONCLUSIONS AND IMPLICATIONS

Small-group methods are founded upon a rationale which is more elaborate than those for most other teaching methods. With the exception of programmed instruction, most methods have evolved through trial and error and their rationales are unsystematic. On the other hand, like programmed instruction, the rationale for small-group methods has been more or less systematically derived from an already existing body of scientific knowledge. It is the result of a rather sophisticated melding of learning theory with the techniques of group dynamics.

IMPORTANCE OF INSTRUCTIONAL OBJECTIVES

Clear and explicit instructional objectives are a critical requisite for the effective use of small-group methods. The methods differ in terms of outcomes, requisite instructors, skills, and students' expected reactions. Accordingly, effective use of the methods requires instructors to know precisely what they are trying to accomplish.

An example involving leadership training will illustrate the importance of clearly conceived objectives. Both research and experience have confirmed that an important leadership function is to develop high motivation levels in subordinates.

However, if the exceedingly important issues concerned with the nature of this motivation are ignored, a number of questions important for training design still remain. Is it sufficient for students to be made aware of the fact that other people have motives and needs which must be considered in leadership decisions and actions? Should they be drilled in techniques of "motivating" subordinates? Should they be trained in the ethics of "group-centered leadership?" Would it be desirable to teach something about the psychology of motivation? Answers to methodological questions such as these can be determined only when course objectives have been carefully derived.

The implications of course design are crucial. The purpose of education or training is to achieve change. If change is to be achieved, the instructor must be able to control and manipulate his/her inputs into the course. This is difficult if the instructor is unclear on what is intended to be accomplished. For example, is the result of instruction to be a cognitive change based on the acquisition of information, an attitudinal change brought about by the additional information and experiences gained through the course, or a behavioral change - an improvement in specified skills? If trainers are not clear relative to the specific changes and learning expectations, valid instruction becomes virtually impossible to develop.

The principal task of course designers is to devise suitable strategies for eliciting, controlling, and channeling student behavior. Instructional method selection is based on a theory about the relation of the method to certain desired behaviors. The instructor has a hypothesis about the kind of behavior he/she anticipates following a given treatment, and he/she proceeds to test it - to apply the method and manipulate the inputs in accordance with theory.

Thus, it is clear that an explicit conception of the desired behavior is essential. An instructor who has objectives clearly in mind and, in addition, has made a careful analysis of the available instructional methods may effectively design a course to achieve genuine change.

THE USE OF SMALL-GROUP METHODS

For certain objectives, small-group methods are the techniques of choice. In other instances, they are valuable options that can provide an educational system with needed flexibility. When used properly, the methods are invaluable for increasing student motivation through greater involvement and participation. Under certain conditions, they even make it possible to ease the loads of overburdened instructors by reducing the time required to prepare formal presentations.

In general, it is feasible to use small-group methods in courses to:

1. Increase understanding and grasp of course content.
2. Enhance motivation and generate greater student involvement.
3. Develop positive attitudes toward later use of presented material.
4. Develop problem-solving skills specific to the course content.
5. Provide practice in the application of concepts and information to practical problems.
6. Generate ideas among students concerning ways of applying acquired knowledge.
7. Develop student commitment to recommended ways of handling problems.
8. Emphasize an important issue.
9. Proceed with instruction when content experts are scarce or not available.

Despite these benefits, small-group methods are not always used in the best possible ways. One reason may be that their flexibility and relative ease of administration can lead to the belief that the methods are foolproof. Like all instructional methods, the success of small-group techniques depends largely upon the care with which they are designed and used. For this reason, it is important to state several important cautions with regard to the most effective use of the methods.

First, it is essential that methods be selected and used with the instructional objective clearly in mind. Thus, the time, effort, and thought expended in accurate definition of objectives, in selection of proper methods, and in use of the methods appropriate to the objectives will usually be well-repaid in the quality of learning that is achieved.

Second, although small-group methods are effective for certain purposes when used alone, they are most successful when students are also equipped with background information concerning the topics or problems under study. The foundation for small-group methods is discussion, but instructive discussion cannot be accomplished unless students have some informational basis from which to talk.

Finally, groups in which members work together over periods of time are, in general, likely to be more efficient and effective vehicles for learning. Therefore, where small-group methods are used repeatedly throughout the duration of a course, it is usually advisable to assign students permanently to groups and allow them to remain together whenever group sessions are considered desirable. An exception is the case where a stated objective is the stimulation of students through exposure to a wide range of ideas and viewpoints. With such an objective, periodic realigning of groups may be advisable.

REQUIREMENTS FOR INSTRUCTORS/SGLs

It is axiomatic that no instructional method is better than the person who uses it. This statement is especially true with respect to small-group methods of instruction. However, the requirements for effective use of the methods are somewhat different than those for other instructional techniques. For example, it is not essential that leaders be content experts although preparation and expertise contribute to the quality of learning. Since responsibility for most of the learning rests with the students and since guides for discussion leaders can be prepared by experts, complete mastery of content is not an essential requirement for instructors.

On the other hand, solid grounding in the rationale and uses of small-group methods is necessary for their maximum effectiveness. Thus, it is important for instructors to be well-trained in use of the methods. This includes not only skill in conducting group sessions but also familiarity with the purposes of the various methods. Understanding of purposes is necessary because they determine which techniques should be selected and how they should be used.

Finally, it is important for an instructor to understand, accept, and be comfortable with the premises embodied in the rationale for small group instruction. Principal among these are the premises that (a) a group of reasonably capable adults can learn on its own if the instructor will let it, (b) it is not essential for an instructor to control every input into a discussion in order for it to be an effective learning experience, and (c) maximum learning occurs when a group breaks its dependence upon its instructor and assumes responsibility for learning.

SELECTION AND USE OF METHODS FOR SMALL-GROUP INSTRUCTION

Scope Of Reference

The focus of this reference is small group methods of instruction. For the present purpose, the term "small group refers" to not more than 16 students. This is an arbitrary definition; however, experience strongly supports the view that instructional effectiveness is reduced when groups consist of more than 16 students, while any number less than 16 can be readily managed in most learning situations.

Furthermore, this reference is concerned with methods that are specifically designed to use the social-psychological forces inherent in small groups for learning purposes. The mere reduction of class size to less than 20 individuals does not constitute use of a small-group method for instructional purposes. Small-group methods are specific techniques. Accordingly, the term "small-group methods of instruction" is restricted to techniques through which group processes are used to stimulate learning.

Approach

Fundamental to all small-group methods is use of the social-psychological forces in small groups to enhance and maximize the conditions under which learning occurs.

Conditions necessary to learn (overcome attitudes that are resistant to change) include (a) a learning climate that provides emotional support to students, (b) opportunity for them to practice an analytical attitude through controlled observation, (c) opportunity to experience varied and realistic learning situations, (d) opportunity for experimentation with new concepts, and (e) opportunity for the student to obtain feedback concerning others' reactions to his or her newly developed ideas.

These conditions can be provided best within the context of a small group which possesses (a) a common goal for learning, (b) a reasonable degree of cohesiveness, (c) norms conducive to learning, and (d) patterns of effective communication - in short, a learning culture. Small-group methods are designed to systematically use these group forces to influence and increase learning.

Producing a Master Instructional Plan

After objectives have been identified and a method has been tentatively chosen, it is useful to assemble all of the principal variables that are involved in a master instructional plan. Here, a master plan is a broad outline of the activities that must occur, the sequence in which they must occur, and other variables, such as instructors, facilities, and so forth, that are required.

Once a plan has been determined, it is useful to test the plan against the following criteria:

1. Relevance for Student Needs. The proposed instruction should be aimed at meeting genuine needs of students. If relevance cannot be demonstrated, consideration should be given to discarding or modifying the plan.
2. Real World Relevancy. The proposed activities should help students to link events in the training situation to "real-world" requirements. Further, the proposed activities should encourage and support the learning on the job. Preplanning activities is recommended for effectiveness and proficiency.
3. Instructor's Range of Competence. Instructors should not try methods in which they lack the required proficiency. On the other hand, some insecurity is natural, and much skill can be rapidly developed through practice.
4. Maximize Motivational Impact. The instructional procedures should stimulate active interest and participation.
5. Multiple Learning. Proposed activities should provide intellectual, attitudinal, or skill types of learning, or combinations of these.
6. Remediation. A good instructional activity should contain provisions for additional help, continuing evaluation, and self-correction.
7. Validation. Evaluation of every session by both instructors and students permits rapid identification of instructional problems and prompt correction of defects.

Unless the master instructional plan measures favorably on all seven criteria, it should be modified until it meets each criterion to the planner's satisfaction.

Planning in Detail

The selection design should be planned in sufficient detail so all participants know what to do. The critical danger here is that plans will become so rigid that modifications cannot be easily accomplished as instruction progresses. No plan can ever anticipate all events that may occur nor can it ever predict the precise atmosphere that will develop in any particular learning group. Therefore, some modification, however slight, is almost inevitable. The most effective training designs have sufficient flexibility built into them so that adjustments can be made easily without serious trauma to either the plan or the personnel.

Conducting the Instruction

Specific procedures for conducting instruction appear in the discussion of each method later in the handbook. However, several suggestions of a general nature are relevant for all methods.

The first time a method is used with a group, it is important to provide a brief overview of the procedures to be followed so that all group members have a common perspective and understand what will be required of them.

In general, an instructor should almost never intervene in a group's deliberations unless it is revealed that serious misunderstandings of the procedures are involved. It is important, however, for the instructor to periodically monitor the activities of each group for which he or she is responsible in order to ensure that members understand and stay on the task.

All of the methods presented in this reference include at least one discussion period of some sort. In development of the training plan, it will be necessary to allocate definite periods of time for the discussion sessions. However, group discussion should continue only so long as interest and participation are high; these will vary significantly according to topic, group composition, and task. For this reason, time allocated for discussion periods should never be frozen into the training design. Experience with discussions of the topic by two or three groups will give a good indication of time required, and adjustments in the design should be made accordingly.

Evaluating and Replanning

Evaluation is a process of determining whether certain actions have led to desired consequences. Usually, one must (a) specify the desired objectives of instruction, (b) devise ways of measuring the extent to which the objectives have been achieved, (c) conduct the instruction, (d) collect the desired information, and (e) analyze and interpret it before replanning the next instructional effort. Evaluations may have differing standards of precision, and highly rigorous evaluation may not always be possible. However, the point of this discussion is that some systematic evaluation should always be performed and program modifications and replanning should be based upon the information so obtained.

COMMONLY USED METHODS FOR SMALL GROUP INSTRUCTION

On the following pages, a number of methods of small group instruction are described. It is recognized that many instructional situations include peculiar conditions which may place limitations upon the ability to use a given method in the most effective way. As one example, the time allocated for training might preclude use of certain methods. As another, the number of available instructors in relation to projected number of students might prevent use of methods requiring small instructor-student ratios. Perusal of the requirements for each method will assist in determining the capability of the method for achieving desired objectives under such limitations.

Figure 1 is presented to assist in identification of small group methods that will accomplish desired instructional objectives. To use Figure 1, select the desired objective from among those listed, and note each method for which an "X" appears in the row for that objective. Then, refer to the discussion of the indicated methods for details as to requirements and procedures for their use.

INSTRUCTIONAL OBJECTIVES ACCOMPLISHED BY SMALL GROUP METHODS

METHODS:

A. Conference
B. Brainstorm
C. Incident-Process Case Discussion
D. Abbreviated Printed Case Discussion
E. Abbreviated Dramatized Case Discussion
F. Topic Discussion
G. Buzz Session
H. Committee Problem Solving
I. Role Playing

Conference

The conference method involves a series of carefully planned meetings with specific goals, in which leader and students discuss topics or problems relevant to the overall purpose of the instructional program. The method rests squarely upon group discussion but, in contrast with the Leaderless Discussion, is dependent upon the trainer's manipulation of the discussion process so that it is always directed toward specific program goals.

Usually the conference leader does not present theory, principles, doctrine, or ways of handling problems. Rather, the group is presented with a topic or problem and members speculate about possible ways of handling it. Solutions may be suggested by members and evaluated by the group through a free exchange of experiences and opinions. The group may evolve ideas that become the accepted solutions, or the leader may guide the discussion along some particular course toward a predetermined solution of his/her own. Thus, in its purest form, the conference method is a highly practical approach to education or training. Students are not exposed to theory, principles, doctrine, or expertise. Rather, discussions and solutions are derived from their own experiences or ideas and are applied to real-life problems.

In this connection, it is important to distinguish between the "free" conference and the "directed" conference. The free conference involves a completely unguided discussion and is usually problem-centered. The agenda is developed by taking a problem-census in which participants suggest potential topics. Solutions are those freely evolved through discussion.

The directed conference is more frequently used for training purposes. Here, the conference leader uses a predetermined agenda and each topic on it is discussed. The discussion may be relatively free; more frequently it is guided by the leader who makes sure certain points are covered. In some cases, the discussion is "directed" to the extent that the leader actually manipulates it to reach a predetermined conclusion.

The conference method has much to recommend it, especially with reference to training management. For example, relatively inexperienced personnel can be trained to lead conferences. Subject-matter experts are not necessary although such specialists are certainly able to improve the quality of a program. Conference leaders' guides can be prepared by experts to provide complete instructions with regard to steering a discussion. If needed, a step-by-step outline can be developed to include all points to be covered, the actual words to use in opening and closing each session, conclusions to be reached, and similar materials. The method thus permits conduct of training with whatever personnel may be at hand. Furthermore, a skillful leader can control the discussion, thus making sure that school solutions are developed by the group.

On the other hand, if the leader is not a content expert, there is much greater risk of superficiality in the discussions. Because of lack of expertise among students discussions tend to skirt issues unless the conference leader can skillfully probe relevant points and raise questions which will give students insight into underlying problems.. In order to accomplish this well, the leader must be sufficiently knowledgeable in content areas to identify both superficial diagnoses and critical issues so that the group can be guided into more meaningful discussions.

Learning from the conference method appears to be mainly cognitive, with heavy emphasis upon insight into practical problems gained through the exchange of viewpoints. Although, as its adherents claim, the method possesses potential for changing attitudes, genuine change seems to depend more upon the competence and skill of individual conference leaders rather than upon the method itself. Because the method rests almost solely upon discussion, no opportunity is provided for skill practice. Thus, students get no experience with real behavior under either experimental or practice conditions. Some trainers attempt to overcome this limitation through the auxiliary use of role playing.

Leaderless Discussion

The term "leaderless discussion" refers to a group discussion for which a formal leader has not been designated and in which an instructor does not participate. Instead, the influence of the instructor is limited to assignment of a topic, problem, or issue to be discussed. In this way, the content and course of the discussion are determined almost completely by the students.

Most commonly, leaderless discussion is used in conjunction with large-group sessions to introduce issues, to generate involvement among participants, and to provide opportunity for the exchange of ideas. When used in this way, the leaderless discussion groups are, in effect, sub-groups of the larger classes. The usual procedure is for the instructor of a large class to divide it into small groups that are then required to discuss some topic, problem, or issue for a specified period of time. The discussion

may occur either before a formal presentation (to introduce issues or generate involvement) or following it (to exchange ideas). In either case, the purpose is to generate more effective learning by overcoming the formalities inherent in large classes through subgrouping and spontaneous discussion.

Brainstorming

Brainstorming was initially developed in the U.S. advertising industry in the 1950's. The purpose of brainstorming is to generate ideas or solutions that will help to solve a problem. It works best with 6-15 people, a recorder and a group leader. The brainstorming method separates idea generation from idea evaluation. Judging ideas halts idea generation and discourages contribution. Therefore, in the idea generation stage phrases like "that will take too much time," "it would cost too much," "would never work," "we've done that before" are not allowed. Screening and evaluation of ideas comes later.

The rules for brainstorming are:

- No critical remarks allowed during generating phase.
- "Piggybacking" is OK. Piggybacking is building on a team members ideas.
- Far-fetched ideas are helpful. They are easier to modify than more practical ideas, and they keep the group going.
- Volume is wanted. Many ideas make a solution more likely.
- Evaluation comes after idea generating.

The following suggestions will make your brainstorming sessions more successful:

- State the purpose of the brainstorming session clearly.
- Have the group members give one idea at a time.
- Move at a quick pace. Don't get bogged down in discussion.
- Praise the number of ideas only. Praise for good ideas will suppress idea flow.

Buzz Sessions

A "buzz session" is a brief but intensive discussion held among a small number of participants without advance preparation and with a minimum of formality. In this procedure, a question or issue is posed to a class. Members are then asked to turn to one or several neighbors (or to form convenient groups) and to engage in discussion for several minutes.

Buzz sessions appear to be most useful for introducing issues and problems, and thus, laying groundwork for learning to be achieved from later formal presentations or guided class discussions. Some evidence exists that buzz sessions result in both improved problem solving and participation in class discussions. They do not appear to exert much effect upon attitudes.

Topic Discussions

Another type of leaderless discussion is the "topic discussion." In this form, the instructor assigns a specific topic or issue for discussion and allows a fairly lengthy period of time, such as 30 minutes or an hour, for completion. Advance readings may be assigned to prepare students for the discussion. The instructor may also provide students with a list of issues for discussion, guidance as to questions to be answered, and so forth. In all instances, however, responsibility for the nature and quality of the discussion rests with the students.

The topic discussion is useful for identifying issues or for introducing a problem to students. When students discuss a problem prior to a formal presentation such as a lecture or film, their attention becomes focused upon critical issues, and their involvement with formally presented material is greater. Another use for topic discussions is to develop solutions to problems. Here, a limitation is that clear-cut solutions are sometimes difficult to obtain because of lack of the direction that could be provided by a discussion leader.

Learning achieved through topic discussions appears to be mainly in the form of increased sensitivity to issues and problems and, in better groups, perhaps a fairly superficial insight into solutions to specific problems.

Case Method

In general, the case method involves the exposure of students to accounts of concrete situations with some temporal and developmental span in which a variety of factors are at work. The cases are

descriptions (printed, tape-recorded, or filmed) of actual situations from real life. Students discuss them with the objectives of discovering underlying principles, if any, and applying the principles to diagnosis and solution of the problems. Although case discussions may be held with large classes, much of the effectiveness of discussion is lost as size of class increases; the greatest learning seems to be achieved when discussion groups are small. For this reason, the case method is included in this analysis of small-group instructional methods.

Several approaches to the study of cases have been developed. In fact, some practitioners consider role playing and even sensitivity training to be derivations of the case method. However, for this report, the distinction will be retained. Here, discussion of the case method will be limited to the Incident-Process method and the abbreviated case.

A Case Discussion allows a group to review a printed case which describes an actual situation, together with all surrounding facts, contributing factors, and incidental conditions.

Cases are presented to students for considered analysis, open discussion, and final decision as to the action that should be taken. Because cases are lengthy and complex, they must be assigned for reading and analysis prior to the class meeting. At the option of the instructor, written analyses of the cases may be required prior to the class discussion. The instructor plays an active but nondirective role in stimulating discussion and encouraging mature analysis.

Composition of the case is a highly important and critical determinant of success with this method. Although single case-discussion sessions may be beneficial, maximum learning occurs from repeated exposure to analysis and discussion of a variety of cases.

The principal disadvantages of the abbreviated case are that unimportant facts are eliminated and the minimal information which appears is presented in such a straightforward manner that students have no opportunity to practice sifting out essential elements from those that are not important. Thus, analysis may become too simple as compared with real situations where an individual may have to weigh and discard a number of secondary factors before arriving at a solution of the central problem.

Abbreviated Case (Dramatized)

One modification of the abbreviated case, which should be mentioned, is the dramatized case. In this form, a short case is presented through the medium of either tape recordings or film The cases are usually open-ended; that is, they reach a critical point of conflict and end without resolution of the problem. The group then discusses possible issues and solutions.

The principal advantage of the dramatized case is that it communicates important facts without preliminary reading and with heightened dramatic effect. On the other hand, its effectiveness is usually confined to the presentation of dialogue situations. Thus, the oral form of presentation mainly restricts cases to human relations problems. Cases dealing with nonhuman aspects such as planning, organization, and technical problems are difficult to portray.

Incident-Process Method

A modification of the case study is the Incident-Process method. In this method, a brief incident requiring adjudication and decision is presented to students. Then, the group must decide what additional information is required. The discussion leader, usually but not necessarily an instructor, has background and factual material that he/she furnishes only as the members of the group request specific items of information. If the information is not requested, the discussion leader never provides it. Thus, students may finally be required to decide a case on the basis of only partial information because they failed to ferret out everything needed to make a valid decision. After obtaining the desired information, each trainee writes his/her decision and the supporting reasons for it. The decisions are presented publicly and debated with pressure by the leader toward arriving at a common conclusion. Another potential limitation is the traditional emphasis in role playing upon behavior. Unless modified, role playing is weak in teaching about other elements such as decision making. By combining case study with role playing so that the most desirable elements of both are available, the student has the opportunity for learning in both the interpersonal and decision-making aspects of leadership. The students then hear the real decision and analyze the adequacy or inadequacy of their

fact finding and decision making in contrast with it. Thus, over time and numerous cases, students learn to analyze brief incidents in terms of relevant facts and also to become skillful in obtaining these facts.

The Incident-Process method appears to be restricted to development for diagnostic skills. Although students seem to interact more realistically in trying to reach group decisions, there are no opportunities for studying and trying the actual skills of implementation in situations similar to those studied.

Role Playing

There is no limitation to the case method that has special significance for leadership or human relations training. Although cases often describe relationships between people, they are not capable of portraying the more dynamic aspects of human interaction or of generating very intensive involvement with the problem situation. Because cases are inadequate to communicate the numerous and varied behavioral cues available to a person who is actually involved in the face-to-face situation, some of the flavor is lost. In an effort to overcome this limitation, many instructors have turned to role playing.

Use in Instruction

Role playing is a method of portraying human interaction in imaginary situations in such a manner that realistic behavior is elicited. This rather general description implies that role playing can be used for many purposes, and, indeed, such is the case. Developed originally as a psychotherapeutic technique, role playing has also been used successfully for problem illustration, problem diagnosis, and training evaluation. Its greatest training value is in leadership and human relations situations.

For instructional purposes, a situation is presented to the group, and some members are asked to assume roles and to enact the situation toward some resolution. Other students observe the behavior of the actors. The scene may be carried to a resolution, or the instructor may stop it at some critical point in the action. Following the scene, observations, as well as thoughts and feelings of the actors, are reported and discussed by the group. In this way, faulty diagnoses, alternative actions, and discrepancies between diagnoses and action can be identified. Alternative ways of handling the situation may be tried by replaying the scene.

Role playing provides students with opportunities to observe, experience, and practice actual behavior in contexts somewhat similar to reality. Of particular importance in leadership training is the fact that the full significance of learning is only in a minor way related to the problem solution, if any. Rather, focus is upon relationships and impacts of the actors upon the situation. Therefore, analysis is concerned with actual behavior rather than concepts.

Emphasis upon experienced behavior is the characteristic that mainly distinguishes role playing from the methods discussed earlier. Because most leadership problems occur when two or more people interact, the basic approach is to create realistic interpersonal situations, use various methods of collecting information, and endeavor to draw generalizations from the analysis. Generalizations and hypotheses, in turn, are tested in action as students try out new skills. Thus learning is more than verbal. Because the learning grows out of experience and because it deals with the observed behavior of individuals and groups in a public way, role playing is quite different from instructional situations in which behavior is talked about but never examined and in which students never actually experience the problems which are discussed.

Rationale

The rationale for role playing starts from the conviction that the problem of training is not solely to transmit facts or viewpoints but to help the student translate knowledge so that it becomes meaningful in his/her own experience. Therefore, role playing has the objective of student awareness of the implication of his/her actions and of the actions of other people for him/her. The purpose is also for him/her to become skillful in diagnosing and taking actions in ongoing situations. One requirement for the development of this awareness is opportunity for the student to actually experience functioning in realistic situations. Role playing provides this opportunity.

The opportunity to experience realistic situations is an essential requirement. However, experience alone never teaches anything. The important factor is whether the student learns from the experience. Such learning can be instructors' guides that point out the important issues in each case and the directions the discussions are likely to take. The trainer is thus furnished with a ready-made course in supervisory relations. Similar manuals could easily be devised for any course, or instructors could be furnished with rationale and instructions together with materials covering a variety of problems and situations to be used as needed.

Emphasis upon spontaneity and the nature of the instructor role make external control of instruction difficult. While it is easy to obtain uniform presentation of problems across classes, it is virtually impossible to ensure that discussions will be identical. From the viewpoint of spontaneity theory, such uniformity is undesirable for learning. However, regardless of the validity of this view, responsibility for quality and content must rest more with the individual instructor than with training managers.

The fact that role playing is usually limited to portraying close interpersonal behavior is something of a handicap for courses in higher-level leadership where organizational dynamics may be an important topic for study. Some instructors have overcome this problem by designing large role-playing situations so as to enact an entire organization in the process of solving some important problem. Under these conditions, students will fill all of the key roles in the organization and remain in role for longer periods, as much as a day or more at a time. Through the use of observers, students receive data relative to their own behaviors well as to the problems occurring between organizational components. Thus, there is an opportunity provided for learning about individual, group, and organizational relationships simultaneously.

Committee Problem Solving

In committee problem solving, real or hypothetical problems are assigned to small groups of students who work together toward a final group product. Whereas the case method emphasizes analysis by individual students followed by discussion, committee problem solving stresses discussion and joint effort from the beginning.

The problems assigned may be such that they can be completed within one class session, in which case they are selected so as to parallel or illustrate on-going instruction. On the other hand, problems may require much research and work on them may extend over weeks or even a term or semester. In either event, all facts and information relevant to the problems must be available to the students or accessible through research.

Although solving a problem should certainly help students to learn more about its content, the major learning to come from this method seems to be in the area of problem-solving techniques. Students learn how to attack problems, gather data, weigh alternatives, and derive solutions. Furthermore, in committee problem solving, students learn how to reconcile differing viewpoints in order to arrive at a group decision.

Committee problem solving is especially useful for training groups of people who are required to work together on a daily basis. Thus, staffs, departments, or sections whose missions involve daily cooperative effort may benefit greatly from jointly attacking and solving assigned problems.

TOPIC 9 : CO-OPERATIVE LEARNING

Cooperative learning is an approach to organizing classroom activities into academic and social learning experiences. It differs from group work, and it has been described as "structuring positive interdependence." Students must work in groups to complete tasks collectively toward academic goals. Unlike individual learning, which can be competitive in nature, students learning cooperatively capitalize on one another's resources and skills (asking one another for information, evaluating one another's ideas, monitoring one another's work, etc.). Furthermore, the teacher's role changes from giving information to facilitating students' learning. Everyone succeeds when the group succeeds. Ross and Smyth (1995) describe successful cooperative learning tasks as intellectually demanding,

creative, open-ended, and involve higher order thinking tasks.[1] Five essential elements are identified for the successful incorporation of cooperative learning in the classroom.

TYPES OF COOPERATIVE LEARNING

Formal cooperative learning is structured, facilitated, and monitored by the educator over time and is used to achieve group goals in task work (e.g. completing a unit). Any course material or assignment can be adapted to this type of learning, and groups can vary from 2-6 people with discussions lasting from a few minutes up to an entire period. Types of formal cooperative learning strategies include:

1. The jigsaw technique
2. Assignments that involve group problem solving and decision making
3. Laboratory or experiment assignments
4. Peer review work (e.g. editing writing assignments).

Having experience and developing skill with this type of learning often facilitates informal and base learning. Jigsaw activities are wonderful because the student assumes the role of the teacher on a given topic and is in charge of teaching the topic to a classmate. The idea is that if students can teach something, they have already learned the material.
Informal cooperative learning incorporates group learning with passive teaching by drawing attention to material through small groups throughout the lesson or by discussion at the end of a lesson, and typically involves groups of two (e.g. turn-to-your-partner discussions). These groups are often temporary and can change from lesson to lesson (very much unlike formal learning where 2 students may be lab partners throughout the entire semester contributing to one another's knowledge of science).
Discussions typically have four components that include formulating a response to questions asked by the educator, sharing responses to the questions asked with a partner, listening to a partner's responses to the same question, and creating a new well-developed answer. This type of learning enables the student to process, consolidate, and retain more information.
In group-based cooperative learning, these peer groups gather together over the long term (e.g. over the course of a year, or several years such as in high school or post-secondary studies) to develop and contribute to one another's knowledge mastery on a topic by regularly discussing material, encouraging one another, and supporting the academic and personal success of group members.
Base group learning (e.g., a long term study group) is effective for learning complex subject matter over the course or semester and establishes caring, supportive peer relationships, which in turn motivates and strengthens the student's commitment to the group's education while increasing self-esteem and self-worth. Base group approaches also make the students accountable to educating their peer group in the event that a member was absent for a lesson. This is effective both for individual learning, as well as social support.

ELEMENTS OF COOPERATIVE LEARNING

Brown &Ciuffetelli Parker (2009) and Siltala (2010) discuss the *5 basic and essential elements* to cooperative learning:

1. Positive interdependence
    1. Students must fully participate and put forth effort within their group
    2. Each group member has a task/role/responsibility therefore must believe that they are responsible for their learning and that of their group

2. Face-to-face promotive interaction
    1. Members promote each other's success
    2. Students explain to one another what they have or are learning and assist one another with understanding and completion of assignments
3. Individual and group accountability
    1. Each student must demonstrate mastery of the content being studied
    2. Each student is accountable for their learning and work, therefore eliminating "social loafing"
4. Social skills
    1. Social skills that must be taught in order for successful cooperative learning to occur
    2. Skills include effective communication, interpersonal and group skills
        1. Leadership
        2. Decision-making
        3. Trust-building
        4. Communication
        5. Conflict-management skills
5. Group processing
    1. Every so often groups must assess their effectiveness and decide how it can be improved

In order for student achievement to improve considerably, two characteristics must be present:

1. When designing cooperative learning tasks and reward structures, individual responsibility and accountability must be identified. Individuals must know exactly what their responsibilities are and that they are accountable to the group in order to reach their goal.
2. All group members must be involved in order for the group to complete the task. In order for this to occur each member must have a task that they are responsible for which cannot be completed by any other group member.

Cooperative Learning Techniques

There are a great number of cooperative learning techniques available. Some cooperative learning techniques utilize student pairing, while others utilize small groups of four or five students. Hundreds of techniques have been created into structures to use in any content area. Among the easy to implement structures are Think-Pair-Share, Think-Pair-Write, variations of Round Robin, and the Reciprocal TeachingTechnique Awell known cooperative learning technique is the Jigsaw, Jigsaw II and Reverse Jigsaw.

Think Pair Share

Originally developed by Frank T. Lyman (1981), Think-Pair-Share allows for students to contemplate a posed question or problem silently. The student may write down thoughts or simply just brainstorm in his or her head. When prompted, the student pairs up with a peer and discusses his or her idea(s) and then listens to the ideas of his or her partner. Following pair dialogue, the teacher solicits responses from the whole group.

Jigsaw

Students are members of two groups: home group and expert group. In the heterogeneous home group, students are each assigned a different topic. Once a topic has been identified, students leave the home group and group with the other students with their assigned topic. In the new group, students learn the material together before returning to their home group. Once back in their home group, each student is accountable for teaching his or her assigned topic.

Jigsaw II

Jigsaw II is Robert Slavin's (1980) variation of Jigsaw in which members of the home group are assigned the same material, but focus on separate portions of the material. Each member must become an "expert" on his or her assigned portion and teach the other members of the home group.

Reverse Jigsaw

This variation was created by Timothy Hedeen (2003)[It differs from the original Jigsaw during the teaching portion of the activity. In the Reverse Jigsaw technique, students in the expert groups teach the whole class rather than return to their home groups to teach the content.

Reciprocal Teaching

Brown &Paliscar (1982) developed reciprocal teaching. It is a cooperative technique that allows for student pairs to participate in a dialogue about text. Partners take turns reading and asking questions of each other, receiving immediate feedback. Such a model allows for students to use important metacognitive techniques such as clarifying, questioning, predicting, and summarizing. It embraces the idea that students can effectively learn from each other.

The Williams

Students collaborate to answer a big question that is the learning objective. Each group has differentiated questions that increases in cognitive ability to allow students to progress and meet the learning objective.

STAD (or Student-Teams-Achievement Divisions)

Students are placed in small groups (or teams). The class in its entirety is presented with a lesson and the students are subsequently tested. Individuals are graded on the team's performance. Although the tests are taken individually, students are encouraged to work together to improve the overall performance of the group.

Research supporting cooperative learning

Research on cooperative learning demonstrated “overwhelmingly positive” results and confirmed that cooperative modes are cross-curricular. Cooperative learning requires students to engage in group activities that increase learning and adds other important dimensions. The positive outcomes include academic gains, improved race relations and increased personal and social development. Students who fully participate in group activities, exhibit collaborative behaviors, provide constructive feedback, and cooperate with their groups have a higher likelihood of receiving higher test scores and course grades at the end of the semester.[Cooperative learning is an active pedagogy that fosters

higher academic achievement. Cooperative learning has also been found to increase attendance, time on task, enjoyment of school and classes, motivation, and independence

UNIT III COMMUNICATION IN THE CLASS ROOM
TOPIC 1 : SKILL AND COMPETENCIES FOR EFFECTIVE INSTRUCTION

1. MICROTEACHING

Microteaching is a training technique whereby the teacherreviews a videotape of the lesson after each session, in order to conduct a "post-mortem". Teachers find out what has worked, which aspects have fallen short, and what needs to be done to enhance their teaching technique. Invented in the mid-1960s at Stanford University by Dr. Dwight Allen, micro-teaching has been used with success for several decades now, as a way to help teachers acquire new skills.

In the original process, a teacher was asked to prepare a short lesson (usually 20 minutes) for a small group of learners who may not have been her own students. This was videotaped, using VHS. After the lesson, the teacher, teaching colleagues, a master teacher and the students together viewed the videotape and commented on what they saw happening, referencing the teacher's learning objectives. Seeing the video and getting comments from colleagues and students provided teachers with an often intense "under the microscope" view of their teaching.

Micro lessons are great opportunities to present sample "snapshots" of what/how you teach and to get some feedback from colleagues about how it was received. It's a chance to try teaching strategies that the teacher may not use regularly. It's a good, safe time to experiment with something new and get feedback on technique.

Meaning and Definition of Micro-Teaching

Meaning

Micro teaching is a procedure in which a student teacher practices teaching with a reduce number of pupils in a reduced period of time with emphasis on a narrow and specific teaching skill.

Definition

• "Microteaching is a scaled down teaching encounter in class size and time
- D.W.Allen(1966)

• "Microteaching is defined as a system of controlled practice that makes it possible to concentrate on specified teaching behaviour and to practice teaching under controlled conditions."
- D.W. Allen &A.W.Eve (1968)

• "Microteaching is a scaled down teaching encounter in which a teacher teaches a small unit to a group of five pupils for a small period of 5 to 20 minutes"
- L.C. Singh (1977)

Objectives of Microteaching

• To enable teacher trainees to learn and assimilate new teaching skills under controlled conditions.
• To enable teacher trainees to master a number of teaching skills.
• To enable teacher trainees to gain confidence in teaching.

Characteristic of Microteaching

- Microteaching is a highly individualized training device
- Microteaching is an experiment in the field of teacher education which has been incorporated in the practice teaching schedule
- It is a student teaching skill training technique and not a teaching technique or method
- Microteaching is micro in the sense that it scale down the complexities of real teaching
- Practicing one skill at a time
- Reducing the class size to 5 – 10 pupil
- Reducing the duration of lesson to 5 – 10 minutes
- Limiting the content to a single concept
- immediate feedback helps in improving, fixing and motivating learning
- The student are providing immediate feedback in terms of peer group feedback, tape recorded/CCTV
- Microteaching advocates the choice and practice of one skill at a time

Steps of Micro-teaching The Micro-teaching programme involves the following steps:
Step I Particular skill to be practiced is explained to the teacher trainees in terms of the purpose and components of the skill with suitable examples.
Step II The teacher trainer gives the demonstration of the skill in Micro-teaching in simulated conditions to the teacher trainees.
Step III The teacher trainee plans a short lesson plan on the basis of the demonstrated skill for his/her practice.
Step IV The teacher trainee teaches the lesson to a small group of pupils. His lesson is supervised by the supervisor and peers.
Step V On the basis of the observation of a lesson, the supervisor gives feedback to the teacher trainee. The supervisor reinforces the instances of effective use of the skill and draws attention of the teacher trainee to the points where he could not do well.
Step VI In the light of the feed-back given by the supervisor, the teacher trainee replans the lesson plan in order to use the skill in more effective manner in the second trial.
Step VII The revised lesson is taught to another comparable group of pupils.
Step VIII The supervisor observes the re-teach lesson and gives re-feed back to the teacher trainee with convincing arguments and reasons.
Step IX The 'teach – re-teach' cycle may be repeated several times till adequate mastery level is achieved.

Micro-teaching Cycle

The six steps generally involved in micro-teaching cycle are Plan , Teach , Feedback Replan , Reteach , Refeedback. There can be variations as per requirement of the objective of practice session. These steps are diagrammatically represented in the following figure :

Diagramatic representation of a Micro-teaching Cycle

Plan : This involves the selection of the topic and related content of such a nature in which the use of components of the skill under practice may be made easily and conveniently. The topic is analyzed into different activities of the teacher and the pupils. The activities are planned in such a logical sequence where maximum application of the components of a skill is possible.

Teach : This involves the attempts of the teacher trainee to use the components of the skill in suitable situations coming up in the process of teaching-learning as per his/her planning of activitieó. If the situation is different and not as visualized(in the planning of tTe activities,

the teacher should modify his/her behaviour ás per the demand of the situation in the Wlass. He should have the courage and confidence to handle the situation arising in the class effectively.

Feedback : This term refers to giving information to the teacher trainee about his performance. The information includes the points of strength as well as weakness relating to his/her performance. This helps the teacher trainee to improve upon his/her performance in the desired direction.

Re-plan : The teacher trainee replans his lesson incorporating the points of strength and removing the points not skillfully handled during teaching in the previous attempt either on the same topic or on another topic suiting to the teacher trainee for improvement.

Re-teach : This involves teaching to the same group of pupils if the topic is changed or to a different group of pupils if the topic is the same. This is done to remove boredom or monotony of the pupil. The teacher trainee teaches the class with renewed courage and confidence to perform better than the previous attempt.

Re-feedback : This is the most important component of Micro-teaching for behaviour modification of teacher trainee in the desired direction in each and every skill practice.
Time duration for the microteaching is;oTeach : 6 Minutes.
o Feedback : 6 Minutes.
o Re-Plan :12 Minutes.
o Re-Teach : 6 Minutes.
o Re-Feedback : 6 Minutes.

Phases of Micro-teachingThere are three phases of the Micro-teaching procedure which you have studied in the previous section of this Unit. They are :
1. Knowledge Acquisition Phase.
2. Skill Acquisition Phase.
3. Transfer Phase of Micro-teaching.

1. Knowledge Acquisition Phase (Pre-Active Phase)
It includes the activities such as;
Ø Provide knowledge about teaching skills.
Ø Observe the demonstration of teaching skill.
Ø Analyze and discuss the demonstration of the teaching skill.

2. Skill Acquisition Phase (Inter-active Phase)It includes the activities such as;
Ø Planning and preparation of micro lesson for a skill.
Ø Practicing the skill.
Ø Evaluation of the practiced skill (Feedback).
Ø Re-plan , Re-teach and re-feedback till the desired level of skill is achieved.

3. Transfer Phase (Post –Active Phase)
Ø Giving opportunity to use the mastered skill in normal class room teaching.
Ø Integrate the different skill practiced

Link Practice (Integration of Teaching Skills) When mastery has been attained in various skills ,the teacher trainee is allowed to teach the skills together. This separate training

programme to integrate various isolated skills is known as 'Link Practice'
ü It helps the trainee to transfer effectively all the skills learnt in the micro teaching sessions.
ü It helps to bridge the gap between training in isolated teaching skills and the real teaching situation faced by a student teacher.
ü Desirable Number of Pupils :15-20
ü Preferable Duration :20minutes.
ü Desirable Number of Skills :3-4 Skills
• Link practice or integration of skills can be done in two ways;
Integration in parts3 or 4 teaching skills are integrated and transferred them into a lesson of 15-20 minutes duration. And again 3 or 4 skills are integrated and are transferred all the skills to one lesson.
Integration as a wholeStudent teacher integrates all the individual teaching skills by taking them as a whole and transferred them into a real teaching situation.

Merits of Microteaching
• It helps to develop and master important teaching skills.
• It helps to accomplish specific teacher competencies.
• It caters the need of individual differences in the teacher training.
• It is more effective in modifying teacher behaviour.
• It is an individualized training technique.
• It employs real teaching situation for developing skills.
• It reduces the complexity of teaching process as it is a scaled down teaching.
• It helps to get deeper knowledge regarding the art of teaching.

Limitations of Microteaching
•It is skill oriented; Content not emphasized.
• A large number of trainees cannot be given the opportunity for re-teaching and re-planning.
• It is very time consuming technique.
• It requires special classroom setting.
• It covers only a few specific skills.
• It deviates from normal classroom teaching.
• It may raise administrative problem while arranging micro lessons

Origin and Development of Micro-teaching
The idea of micro-teaching originated for the first time at Stanford University in USA, when an Experimental Project on the identification of teaching skills was in progress under the guidance and supervision of the faculty members (Bush, Allen, McDonald Acheson and many others). This project was aided by Ford Foundation and Kettering Foundation. The team of experts was assigned the development of testing and evaluation tools to measure the attainment of teaching skills. At this juncture Keath Acheson, a research worker was investigating the utility of video tape recorder in the development of technical teaching skills. This instrument could be used for recording the class interaction and the behaviours of the trainee vividly and accurately. This lead to the development of a systematic and accurate method of giving feedback to the teacher trainee. All the steps of micro-teaching technique : Teach → Feedback → Replan → Reteach → Refeedback were formulated. Thus the name of micro-teaching was coined for this method of developing teaching skills in 1963. Since then this technique of teacher training has been widely used in almost all Colleges and Universities of Europe and Asia. In India, it is being used with great emphasis in all the teacher training programmes of developing teaching skills and competencies among teacher trainees.

Microteaching in India

• The department of Teacher education in the NCERT designed a project to study the effectiveness of Microteaching in 1975 in collaboration with the Centre of Advanced Study in Education (CASE) Baroda.
• Research and training programmes for teacher educators were also initiated in collaboration with the department of Education, University of Indore.
• Passi, Singh and Jangira developed instructional materials which were used to train teacher educators.

2. SIMULATION IN TEACHING

A simulation is a form of experiential learning. Simulations are instructional scenarios where the learner is placed in a "world" defined by the teacher. They represent a reality within which students interact. The teacher controls the parameters of this "world" and uses it to achieve the desired instructional results. Simulations are in way, a lab experiment where the students themselves are the test subjects. They experience the reality of the scenario and gather meaning from it. It is a strategy that fits well with the principles of constructivism.

Simulations promote the use of critical and evaluative thinking. The ambiguous or open ended nature of a simulation encourages students to contemplate the implications of a scenario. The situation feels real and thus leads to more engaging interaction by learners. They are motivating activities enjoyed by students of all ages.

Simulations take a number of forms. They may contains elements of a game, a role-play, or an activity that acts as a metaphor. The chief element is that they have context. Board games such as Monopoly or Careers are a type of simulation. The primary distinctions between a game and a "sim" are the nonlinear nature and the controlled ambiguity. Students must make decisions within its context. Success is usually determined by the industry and commitment of the participants. The goal is not to win but to acquire knowledge and understanding.

Advantages

- Enjoyable, motivating activity
- Element of reality is compatible with principles of constructivism
- Enhances appreciation of the more subtle aspects of a concept/principle
- Promotes critical thinking

Disadvantages

- Preparation time
- Cost can be an issue
- Assessment is more complex than some traditional teaching methods

What is its purpose?

Simulations promote concept attainment through experiential practice. Simulations are effective at helping students understand the nuances of a concept or circumstance. Students are often more deeply involved in simulations than other activities. Since they are living the activity the opportunity exists for increased engagement.

Issues from Social Studies for example, such as the management of the environment, politics, community, and culture can be more deeply appreciated through simulations. Similar to labs in a science class, the process itself educates the students. The goal of a sim may be singular or multifaceted. Students might be expected to gain an understanding of inequity in society while participating in a resource distribution activity. A class gains an understanding of the Canadian political system via a mock election campaign. Simulations can reinforce other skills indirectly. Debating, a method associated with some large scale sims, is a skill sharpened within this context. Research skills are often applied to an activity.

How do one do it?

Guided by a set of parameters, students undertake to solve problems, adapt to issues arising from their scenario, and gain an awareness of the unique circumstances that exist within the confines of the simulation. Some simulations require one day, others may take weeks to complete. Scope and content varies greatly. This being true, specific guidelines change with the activity. Several principles however apply to all.

- Ensure that students understand the procedures before beginning. It improves efficacy if the students can enjoy uninterrupted participation. Frustration can arise with too many uncertainties. This will be counter productive.
- Try to anticipate questions before they are asked. The pace of some simulations is quick and the sense of reality is best maintained with ready responses. Monitor student progress.
- Know what you wish to accomplish. Many simulations can have more than one instructional goal. Developing a rubric for evaluation is a worthwhile step. If appropriate, students should be made aware of the specific outcomes expected of them.

How can ONE adapt it?

Simulations can typically be adapted internally to address the specific circumstances of the students and class environment. They can also be offered as a replacement for other teaching strategies thus themselves being an adaptation.

Opportunity for enrichment or modification exists. A Social Studies resource simulation can be adapted to fit a unit in Language Arts. The grade 6 and 7 themes of survival can be drawn out from the need to struggle to obtain limited resources. There are at least 3 ways simulations can be used and internally adapted to classrooms.

- Time - the arc of the activity can be adjusted.
- Content - some simulations offer content more appropriate to specific ages. The election simulation listed in teacher resources, for example, has 3 separate scenarios. Each possesses a similar theme but the content allows the unit to be used from Gr. 5 to 12. See the teacher resource page for details.
- Expectations - Not all students appreciate the subtleties of a concept as well as others. Rubrics can be developed to help the teacher determine the level of success.

Assessment and Evaluation

The nature of simulations mean that experiences are more real than some other techniques. Their drawback can be the assessment. Teachers must monitor the process to ensure that students both understand the process and are benefiting from it. For this reason, it is very helpful to develop a rubric as a guide. Simulations are often best used as part of the process of learning rather than a summative measure of it. Follow-up activities may be helpful to establish a measure of comprehension. Some prepackaged simulations include assessment suggestions. See the resource page for examples. Listed below are a number of rubrics to use as samples and an interesting rubric generator.

Teachers may ask themselves a number of questions to assess the simulation and its apparent success.

- Does this simulation offer an appropriate measure of realism for my group of students?
- Are the desired instructional outcomes well defined?
- Is the level of ambiguity manageable for this group?
- Does the student demonstrate an understanding of his/her role?
- Are problem solving techniques in evidence?
- Does the research being generated match the nature of the problem?
- Is cooperation between participants in evidence?
- Has the student been able to resolve the issue satisfactorily?
- Does the student provide meaningful answers to probing questions?
- Will follow-up activities be necessary?

TOPIC 2 : TEACHING SKILLS: SET INDUCTION, SKILL OF EXPLAINING, STRUCTURING OF QUESTIONS, FLUENCY OF QUESTIONS, RESPONSE

MANAGEMENT, STIMULUS-VARIATION, REINFORCEMENT, ILLUSTRATION WITH EXAMPLES, BLACKBOARD WRITING, SKILL OF CLOSURE

SET INDUCTION

This skill is concerned with methods of preparing classes for a lesson that is pre-instructional orientation. Students practice methods of starting lessons.

- **PURPOSE**

To create an atmosphere in such a way that the students' interest will be set upon the subject or topic they are going to learn; to mentally prepare the students for a suitable and encouraging learning- teaching situation.

This skill is concerned with methods of preparing classes for a lesson that is pre-instructional orientation. Students practice methods of starting lessons.

SKILL OF EXPLAINING AND ILLUSTRATING WITH EXAMPLES

Explanation is a key skill. Generally, the skill of explanation is complex. Explanation is a term, which, through daily use, has acquired several meanings. For example, it can be functional, causal or sequential; and inductive or deductive.

What is explanation? Explanation is to explain or to give understanding to another person. It leads from the known to the unknown, it bridges the gap between a person's knowledge or experience and new phenomena, and it may also aim to show the interdependence of phenomena in a general sable manner. It assists the learner to assimilate and accommodate new data or experience.

The components of skill involved

i. Clarity
ii. Continuity
iii. Relevance to content using beginning and concluding statements
iv. Covering essential points
v. Simple
vi. Relevant and interesting examples appropriate media
vii. Use of inducts, deductive approach

An effective explanation should be simple, clear, concise and interesting.In general it should not be rambling, long or dull. However, what is to be explained may be complex and abstract. Effective explanation requires careful and sensitive planning. It requires the recognition of a number of essential characteristics when putting it into operation.

(i) **Planning**

(a)Establish clearly, in advance, the major point or points you wish to communicate to your pupils. These may be ideas, rules, relationships, generalization, etc.
Establish links between ideas.

(b)Obtain information from pupils about their knowledge, experience, and interest to guide your planning. Your explanation must appeal to your class.

(c)Decide the means by which explanation is likely to be effective.

(d)Be flexible. Be prepared to modify your plans in the light of feedback from pupils during the lesson. Adapt to pupil needs.

(e)Be brief. Think how much you recall after 10 minutes.

(ii) **Operation**

(a)Consider other skills on which Explanation partly rests (e.g. teacher liveliness) – React to your class Are

(b)Structure: introduction, elaboration, summary.

- Emphasis the main points, so that their importance is clear.

-Show them the relationship between the main points

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-Determine (if necessary) the general principles involved.

a) Examples

These are central to teaching new ideas and to obtaining feedback as to whether the ideas have been understood. Examples may be used:

i. To provide concrete instances or information within the learner's experience andunderstanding, to lead pupils to perceive common features, and to abstractgeneralizations appropriate to all the specific instances.

ii. To test understanding of an idea, concept or principle, it may be applied to particular situations, for example to produce examples of the general category, to determine whether a particular phenomenon is an instance of the general relationship, or to use the general principle to solve a specific problem.

Deductive approach

It states the generalization first, and applies it to a number of examples. The initial statement, even if not fully understood by students, helps to focus their attention on those aspects of examples on which teacher wishes them to concentrate. Classroom observation suggests that effective explanation often occurs when first statement of aural is followed by examples and then by a second statement of the rule, for example, clarity in establishing relationship between general rule and specific examples.

In all cases, it is essential for the teacher to use examples which are relevant to student's experience and interests, and their present level of understanding.

· **SKILL OF USING NON-VERBAL CLUES AND KEEPING SILENT (SUCH AS GESTURES AND MOVEMENTS)**

Most teachers talk too much. Training in the use of silence and non-verbal cues is aimed at remedying this state of affairs. But it is not just a negative thing. Silence can have a powerful effect if used insightfully, and non-verbal cues can very often be more effective than verbal ones.

Non-Verbal Aspects

a) Movement

Generally, a moving object is more interesting than a stationary one. Teacher cause their teaching space purposefully. Don't be stuck to the blackboard. Move towards the class, and amongst them. In this way, as the teacher, they can create and convey various meanings such as friendliness,

firmness, hostility, anger, and pleasure. Movementcan also help to exercise students' eyeballs and prevent them falling asleep

b) Gestures and Facial Expressions

As a teacher, the way they use their hands, body and head, and the way they vary their facial expressions will also convey meaning and emphasis. Many gestures are used in communication and interpersonal contact. Think of ways in which teacher can encourage attention or positive response from students by teacher's gestures and facial expressions.

c) Eye-contact

The eyes are crucial in conveying meaning, emotion, influencing interaction gaining and holding attention. Teacher should use their eyes purposefully, inexperienced teachers are often too nervous to look at the class. Scan the whole of the class. In general, look at students while teaching. Teacher will obtain response, control and feedback of their interest and understanding in this way.Looking in to their eyes will help to convey messages and meaning, and is an effective device for controlling class discipline.

d) Interaction

Don't talk too much. Use strategies to encourage various interaction patterns such as T-P, P-P, T-group. Involve the pupils.

e)Switching sensory channel

Vary the stimulus between voices visual for example to hold attention.

Teacher liveliness basically involves changing patterns of stimulation of the learner, to gain and hold interest and attention. It means use of these various qualities and cues in combination, and for most people it requires practice. Teacher that have experience of teachers or lecturers, who use very few cues, rarely change facial expressions, are limited in movements and speak in a dull, flat, monotonous voice. They probably bored them. Therefore, the skills on using non-verbal are very important for students in teaching and learning.

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SKILL OF ASKING QUESTION

SKILL OF QUESTIONING

I n t r o d u c t i o n

When the teacher asks questions from the pupils in his class different situations arise. They are The pupil may give no response,2.The pupil may give incorrect,3.The pupil may give partially correct response and4.The pupil may give correct response. How to deal with all these situations effectively is the main theme of this skill. In case of no response or incorrect response the teacher goes deep into pupil's responses by asking many questions about what he already knows and to lead him to the correct response. When the response is correct the teacher mayhelp the pupil to go deep into the content by asking questions of how, why and sometimes of whattypes also. The skill involves a series of questions to go deep into pupil's responses.

Components of Skill

This technique means to go deep into the pupil's response when it is in corrector no response. Then a series of hints or prompts are given to pupil through step by step questioning in order to lead the pupil to the desired correct response. Let us take the following example :

Example

T :What are the functions of Municipality
P : No response.T : Who supplies water to the city ?P : Municipality.
Seeking Further Information:
This technique is used when the response of pupil is incomplete or partially correct. The teacher helps the pupil to clarify or elaborate or explain his initial response by asking more small questions or creating situation in which the pupil is made to think and respond.
Example
:T : What are the functions of Municipality ?P : To supply water to the whole city.T : What are the oth er functions ?

Redirection :
This technique involves asking the same question from another pupil. The main purpose of this technique is to increase more and more pupil participation. When the situation is of no response or incorrect response prompting should be preferred to redirection.

· **SKILL OF STIMULUS VARIATION**

The third skill in microteaching is skill of stimulus variation. Most people are able tolerant about the world around them via their five senses which is sight, sound, taste, touch and smell. Unfortunately, educators sometimes forget to use as many of five senses as possible. Training in the skills of stimulus variation is aimed at helping student teachers to avoid teaching styles likely to induce boredom in their pupils. A stimulus situation that changes in different ways is one of the most powerful influences in maintaining orienting activity by the pupils. Carefully structured teaching material and approaches to the subject can have an important effect here, but so can the way a teacher conducts his lesson.

Stimulus variation, in the Stanford sense, focuses mainly on the latter. Some of the things the student teacher is trained in are the use of movement in a systematic way and the avoidance of teaching from one spot, the use of gestures, and the development of verbal and non-verbal methods of focusing children's attention, the development of teaching methods other than the teacher monologue by encouraging pupil participation, the systematic use of pauses, and the controlled use of different sensory channels by switching primary modes of communication,going, for example, from the oral to the visual.

For the success of any lesson, it is essential to secure and sustain the attention of the pupils-learning is optimum when the pupils are fully attentive to the teaching-learning process. How to secure and sustain the attention is main theme of this skill. It is known on the basis of

Psychological experiments that attention of the individual tends to shift from one stimulus toothier very quickly. It is very difficult for an individual to attend to the same stimulus for more than a few seconds. Therefore, for securing and sustaining the attention of the pupils to the lesson it is imperative to make variations in the stimulus. This is because attention is the necessary pre-requisite for learning.

The components of skill involved are:

i. Movements
ii. Gestures
iii.Change in Speech Pattern
iv. Change in Interactions Style

v. Focusing
vi. Pausing
vii. Oral-visual Switching

The meaning and purpose of these components in the context of the skill of stimulus variation will be discussed below.

Movements

It means that making movements from one place to another with some purpose. (For writing on the black board, to conduct experiment, to explain the chart or model, to pay attention to the pupil who is responding to some question etc.)

Gestures

These include movements of head, hand and body parts to arrest attention, to express emotions or to indicate shapes, sizes and movements. All these acts are performed to become more expressive.

Change in Speech Pattern

When the teacher wants to show emotions or to put emphasis on a particular point, sudden or radical changes in tone, volume or speed of the verbal presentation are brought out. The change in the speech pattern makes the pupils attentive and creates interest in the lesson.

Change in Interaction Style

When two or more persons communicate their views with each other, they are said to be interacting. In the classroom the following three styles of interaction are possible:

1. Teacher ↔ Class (Teacher talks to class and vice versa)
2. Teacher ↔ Pupil (Teacher talks to pupil and vice versa)
3. Pupil ↔ Pupil (Pupil talks to pupil)

All types of interaction should go side by side to secure and sustain pupils' attention.

Focusing

The teacher draws the attention of the pupils to the particular point in the lesson either by using verbal or gesture focusing. In verbal focusing the teacher makes statements like, "look here" listen to me" "note it carefully". In gestural focusing pointing towards some object with fingers or underlining the important words on the black board.

Pausing

This means "stop talking" by the teacher for a moment. When the teacher becomes silent during teaching, it at once draws the attention of the pupils with curiosity towards the teacher. The message given at this point is easily received by the pupils.

Oral-Visual Switching

The teacher gives information to the class verbally about something. This is called oral medium. When the teacher is showing maps, charts and object without saying something, this is called visual medium. If the teacher is giving information to the pupils through any one medium (oral, visual, oral visual) for a long time, it is possible that the students may lose attention to what the

teacher is conveying to them. Therefore it is essential for the teacher to change medium rapidly in order to secure and sustain pupils' attention to what he says.

There are three types media

1) **Oral oral – visual**

When the teacher while speaking shows objects, charts and models and explains their various parts. It is switching from oral to oral-visual.

2) **Oral visual**

When the teacher while speaking, shows objects, maps, charts, globe etc. It is switching form oral to visual.

3) **Visual oral – visual**

When the teacher demonstrates the experiment silently and then explains the Phenomenon with the help of charts, maps, diagram etc. This is visual-oral switching.

These devices are used interchangeably to secure and sustain pupils' attention to the lesson. Let us use these components of the skill of stimulus variation in the following micro-lesson to attractant focus pupil's attention

SKILL OF REINFORCEMENT

Every responding pupil of the class needs social approval of his behavior. To satisfy this need, he is always eager to answer each question known to him. If the teacher is encouraging the pupils by statements like, "good", that is very good and certain non-verbal expressions, as smiling, nodding the head and paying attention to the responding pupil, the pupil participation in the class is maximized. The main theme of the skill is that encouraging remarks of the teacher increases and discouraging remarks decreases the pupil-participation in the development of the learning process. Teachers are right if their ways are in accordance with the following components of the skill.

The components of skill involved are:

i. Positive Verbal Reinforcement
ii. Positive Non-Verbal Reinforcement
iii. Negative Verbal Reinforcement
iv. Negative Non-Verbal Reinforcement
v. Wrong use of Reinforcement
vi. Inappropriate use of Reinforcement

Positive -Verbal Reinforcement These are the positive comments given by the teacher on the correct response of the pupil. They are:

(i) Using words and phrases like, "good", "very good" and "excellent".
(ii) Repeating and rephrasing pupil's response.
(iii) Using pupil's idea in the development of the lesson.
(iv) Using extra-verbal cues, like "um", "um", "aha" to encourage pupils.
(v) Using prompts like carry on think again, to help the pupil give correct response.

Positive Non -Verbal Reinforcement

The teacher gives comments to pupils on their correct response without using words. For example, this he does by nodding the head, smiling, patting, looking attentively at the responding pupil, and writing pupil's answer on the black boards. The teacher encourages the pupils to participate maximally in the development of the lesson.

Negative Verbal Reinforcement

The teacher gives comments on the incorrect or partially incorrect response by telling that the pupil's response is incorrect or making sarcastic remarks like "idiots", "stupid" and others. Such behavior of the teacher discourages pupil-participation and should not be used.

Negative Non -Verbal Reinforcement

The teacher shows his disapproval without using words. This involves, frowning, staring, and looking angrily at the responding pupil, when he gives wrong response. This type of behavior of the teacher creates fear in the minds of the pupil and decreases pupil-participation.

Wrong use of Reinforcement

This is the situation, where the teacher does not give reinforcement when the situation is demanding encouragement.

Inappropriate use of Reinforcement

This is the situation when the teacher does not encourage the pupil with respect to quality of his response. He uses same type of comment for every response.

SKILL OF EXPLANING AND ILLUSTRATION WITH EXAMPLE

teaching is not primarily telling. it's helping other people learn. that means the focus is on the learners, not the teacher. people learn best through experiencing something themselves, so when you are striving to teach something, you are constantly trying to get into the shoes of the learners so that you can better understand where they are and what they need from you to learn the subject understudy.

explanation is a key skill. generally, the skill of explanation is complex explanation is to explain or to give understanding to another person. it leads from the known to the unknown, it bridges the gap between a person's knowledge or experience and new phenomena, and it may also aim to show the interdependence of phenomena in a general sable manner. it assists the learner to assimilate and accommodate new data or experience.

in a classroom, an explanation is a set of interrelated statements made by the teacher related to a phenomenon, an idea:, etc. in order to bring about or increase understanding in the pupils about it. the teacher should practice more and more of desirable behaviors like using explaining links using beginning and concluding statements and testing pupil understands behaviors like making irrelevant statements, lacking in continuity, using inappropriate vocabulary, lacking in fluency, and using vague words and phrases as far as possible.

a class in not homogeneous group. some pupils are intelligent some have normal intelligence, some are mature and others are immature. but the teacher has to impart knowledge to all. to present the subject matter in the simplified form before the pupils and making it acquirable is called the skill of explanation. it is necessary in all the subjects. in its absence the presentation of the subject matter is not possible. in the skill of explanation, such words are

used in the statements by which the statements exhibit the clarity of their meanings.

the explanation serves two purposes: (1) to introduce the subject by giving some background about its usefulness and application; and (2) to describe the subject in a simple, complete, and tantalizing way. the explanation should create a desire to become proficient in the subject under study

the components of skill of explaining involved
- clarity
- continuity
- relevance to content using beginning and concluding statements
- covering essential points
- simple
- relevant and interesting examples appropriate media
- use of inducts, deductive approach, it can be functional, causal or sequential

characteristics of effective explanation

coordination in statements. coordination in the statements used during the explanation is very essential; otherwise there will be all hotch- potch.

relevant statements. while presenting the subject matter, the concerned statements should be relevant.

fluency in language. the teacher should use fluent language so that the pupils may listen and understand his thoughts.

connecting links. the use of words, idioms or connecting links such as 'therefore' as a result of etc. is essential to link the different thought or statements.

clear beginning statement. before starting any explanation, the teacher should make the pupils aware of what he is to teach on that day through a clear beginning statement.

use of proper words. the teacher should use proper words for explaining an object or an event otherwise he would be in a state of confusion

practicing skill of explaining

an effective explanation should be simple, clear, concise and interesting. in general it should not be rambling, long or dull. however, what is to be explained may be complex and abstract. effective explanation requires careful and sensitive planning. it requires the recognition of a number of essential characteristics when putting it into operation :

(i) planning

establish clearly, in advance, the major point or points you wish to communicate to your pupils. these may be ideas, rules, relationships, generalization, etc.
establish links between ideas.
obtain information from pupils about their knowledge, experience, and interest to guide your planning.your explanation must appeal to your class.
decide the means by which explanation is likely to be effective.
be flexible.be prepared to modify your plans in the light of feedback from pupils during the lesson. adapt to pupil needs.
be brief.think how much you recall after 10 minutes.

(ii) operation

- (a)consider other skills on which explanation partly rests (e.g. teacher liveliness) – react to your class entering behavior

- (b)structure: introduction, elaboration, summary.

- (c) emphasis the main points, so that their importance is clear.

- (d) show them the relationship between the main points.

- (e) determine (if necessary) the general principles involved.

suggestions for effective explanation

try to think like a student, not like a professor. remember that they probably haven't taken a lot of advanced classes or worked in a lab. so they are lacking in both basic facts and general background.

1. probe first. before you start to explain a topic or problem, try find out exactly where the student is stuck. don't just start at the beginning of the problem or topic and plow through to the end. when the student asks you to explain problem, ask the student something like, "where did you get stuck? or what is the part you don't understand?" this probing for the exact nature of the student's problem may seem to take a long time, but it pays in the end. it will save you from wasting time and energy explaining things that are clear and allow you to zero in on the real problem.

2. explain in small bites. explain a short piece of a problem at a time, and then don't go on until

(a) there is surety that everyone understands what you explained, and

(b) there is surety that you need to explain the rest.

3. don't start too far back. when a student asks a specific question, try to answer it without going over a lot of background material

ways to get the students to tell you what they need to know – how to figure out where they are at:

a. collect questions

ask the students for specific questions or topics that they want you to go over. write the questions &/or topics on the board. do not answer the questions as they are asked. keep collecting questions until you have a reasonably long list. once you have the list of questions/topics on the board, you can look at the list and decide what to do first. you can go over the questions in order of importance, or logical order, or the order they were covered in class. do whatever seems sensible to you. as you cover each question, check it off the list.

the first few times you do this, it may be very difficult to get the students to speak up. so be patient and give them plenty of time to come up with questions. if they don't seem to have any questions, suggest that they look through their notes or text to find points that were unclear. wait until you have a decent length list before you start answering the questions.

this method works best if you can look at the list and see instantly what topics need to be discussed. so be sure your list is self explanatory

b. the old card trick

ask each student to come to class with at least one question written on a 3 x 5 card. collect the cards at the beginning of class and use the questions to organize the session. one way to proceed is to spend a few minutes reading the questions silently. then you can write the good questions on the board, as above, or read them out loud. another way to start is simply to shuffle the cards and read one out loud at random. once you have picked the question(s) to go over, you can answer the questions yourself, or you can let the students answer each other's questions.

an electronic variation – ask the students to email you the questions the night before. this gives you more time to compose your thoughts, decide which questions to use, and look up the answers.

c. ask them a question

ask the students a question, preferably about an experimental situation. after you pose the question, you can then ask the students:

(1) what do you know that's relevant to this question/situation?

(2) what do you need to measure or find out?

after you have discussed what information you need, you can then go over how to use the information to get the answer. this sort of exercise will reveal what level of knowledge the students have (what facts they know) and their level of

insight (how good they are at applying the facts). it will also allow any misconceptions or uncertainties the students have to surface.

there are 7 considerations for effective explanation

1. is the explanation understood?

2. does it interest your class?

3. does it cover the main elements?

4 .did you respond to your pupils understanding?

5. did you classify the responses?

6. are illustrations interesting?

7. are illustrations relevant?
we will now look at the question of examples. effective explanation relies on illustration, analogy and the use of examples. in the task below, attention should be given in particular to these.
examples
these are central to teaching new ideas and to obtaining feedback as to whether the ideas have been understood. examples may be used:

i. to provide concrete instances or information within the learner's experience and understanding, to lead pupils to perceive common features, and to abstract generalizations appropriate to all the specific instances.

ii. to test understanding of an idea, concept or principle, it may be applied to particular situations, for example to produce examples of the general category, to determine whether a particular phenomenon is an instance of the general relationship, or to use the general principle to solve a specific problem.

b) using examples

inductive approach

it starts with examples, and infers generalization from them. the major claims are:

i. it helps students acquire skills for looking for order in an apparently pattern less set of data.

ii. encourages divergent and creative thinking.

deductive approach

it states the generalization first, and applies it to a number of examples. the initial statement, even if not fully understood by students, helps to focus their

attention on those aspects of examples on which teacher wishes them to concentrate. classroom observation suggests that effective explanation often occurs when first statement of aural is followed by examples and then by a second statement of the rule, for example, clarity in establishing relationship between general rule and specific examples.

1. analogies. compare the situation to something that is familiar to the students

2. models. use simple 3d models made of common objects. use pre-school toys, tissue boxes, wire left by the repairmen, , etc, . . these models are low cost, easily replaceable, easy to see, and have great "wake ' up" value. they don't have a lot of detail, which makes it easier to demonstrate the related point. thinking about constructing a useful model or working through a good analogy helps to see the important features of the subject matter

3. using the blackboard. prefer chalk to power point or overheads, especially in a small group setting such as a lab or discussion session. this is partially an aversion to technology that doesn't always work and/or requires equipment that isn't always provided) chalk gives much more flexibility in explaining things find it's easier for students to take notes if one have to write it all on the board. it's also more animated — somehow a chalk talk is more "live" than any of the other options, and therefore more interesting

4. handouts. there are several different kinds of handouts – the first type is to help with note taking. students have a hard time copying diagrams. it's also difficult for the teacher to draw them perfectly. so give out handouts – 1 or 2 pp usually per class, with the basic structures and/or processes drawn the way one plan to draw them on the board. thehandout helps the students follow and take notes without getting lost

in all cases, it is essential for the teacher to use examples which are relevant to student's experience and interests, and their present level of understanding.

general errors & misunderstandings –

1. confusing technical meanings and ordinary meanings of words.

some scientific terms have technical meanings that are very different from their commonsense meanings. for example: the teacher asks "does burning destroy matter?" and the student says "yes." the teacher groans and thinks the student is an idiot. but the student is not — s/he is using the term "destroy" in its ordinary english sense, and the teacher is using it in its technical physics sense. if the teacher's house burns down, the house will certainly be destroyed (in the english sense), even though the atoms that were in the house have not been altered. another example "spontaneously" in chemistry does not mean "very quickly" or "all by itself" — it means "without net input of energy." unfortunately, in common english spontaneously means "all by itself" and often also "very quickly." so students think spontaneous reactions occur rapidly &/or without an enzyme. this type of difference between technical and ordinary meanings often leads to a lot of confusion, because the , book or lecturer is

using the term in the technical sense, while the student is using the same term in its non-technical, commonsense meaning. even when the student tries to use the term correctly, s/he is often confused by the connotations that the word has in common usage.

2. using words that have technical meanings and not even realizing it.

some ordinary english words are used as technical terms, as explained above, but experienced lecturers are so used to using these words that they often forget that these words have special meanings. so the teachers don't define the terms and are surprised when the students don't know what they mean

3. getting confused between similar but not identical terms.

certain terms seem to be difficult to get straight,. there are many pairs of terms that are very similar in meaning and that are often used sloppily even in scientific writing (and speech). to make it worse, some of these terms are synonyms in common speech, such as "inhibition" and "repression." a good way to clear up confusion is to "compare and contrast" — compare what is similar between the two terms and contrast what is different.

precaution for skill of explaining -

- stand in front of what you wrote.
- face the board as you talk.
- write in corners of board or wherever there is space.
- use jargon, abbreviations. (verbally and on board.)
- erase what you just wrote before everyone has finished copying it down. (when there is plenty of other old stuff you could have erased.)
- skip important steps. start explaining in the middle.
- take a lot of time explaining the obvious.
- write too small or in unintelligible handwriting.
- show a slide and wave the laser pointer over it. (but don't explain what's on the slide.)
- mumble.
- talk too fast.
- stare at the floor.
- say something very complex (like the pathway above or a description of a complex structure) and write nothing on the board.
- • insult the students – make fun of them (or their ignorance) when they ask questions, and berate them when they don't speak up. . explain how stupid, worthless, lazy, pampered etc. students are nowadays. not like when i was a student.
- i don't include making actual mistakes – everyone does that! (and it's okay if you admit it.)
- explanation is not in simple language.
- it is given the shape of an advice.
- the thought included in it is not in a sequence. irrelevant things are included.
- it is not according to the age, experience and mental level of the pupils.

- it is complicated, lengthy and small according to the objective of the lesson.

pattern of observation sheet for skill of explaining

components of explanatory skill
frequencies(in minutes)1 2 3 4 5 6
- the words connecting the ideas/statements were used.
- the statement used in the explanation had coordination/continuity.
- initial statements of the explanation were clear.
- the language of the explanations was fluent.
- proper words were used in the explanation.
- questions were asked during explanation.
- relevant statements were used during explanation yes/no.
- explanation also included irrelevant statement yes/no

SKILL OF STIMULUS VARIATION

A teacher uses hand gestures, head and body movements, verbal statements etc in order to draw the attention of her students and to sustain it. The behaviour of the teacher is a stimulus to the pupils. However continued use of stimulus may induce disinterest and inattention on account of so many psychological and physiological factors. The teacher must be skilled in securing and sustaining the attention of her pupils. Stimulus variation deals with a change or variation in the stimuli available in the learner's environment. The teacher should know, when, how and what to change so that her students are attentive. Thus the skill of stimulus variation may be defined as a set of behaviour for bringing about a desirable change in variation in the stimuli which can be used to secure and sustain the student's attention towards classroom activities.

Components

1. Teacher's movement
2. Gestures
3. Changes in speech pattern
4. Focusing
5. Change in interaction style
6. Pausing
7. Aural-visual Switching
8. Physical involvement of the student

SKILL OF REINFORCEMENT

Every responding pupil of the class needs social approval of his behavior. To satisfy thisneed, he is always eager to answer each question known to him. If the teacher is encouraging the pupils by statements like, "good", that is very good and certain non-verbal expressions, assmiling, nodding the head and paying attention to the responding pupil, the pupil

participation inthe class is maximized. The main theme of the skill is that encouraging remarks of the teacher increases and discouraging remarks decreases the pupil-participation in the development of thelearning process.

Inappropriate use of Reinforcement

Positive -Verbal Reinforcement

These are the positive comments given by the teacher on the correct response of the pupil
. They are:(i) Using words and phrases like, "good", "very good" and "excellent".(ii) Repeating and rephrasing pupil's response.
(iii) Using pupil's idea in the development of the lesson.(iv) Using extra-verbal cues, like "um", "um", "aha" to encourage pupils.(v) Using prompts like carry on think again, to help the pupil give correct response.

Positive Non -Verbal Reinforcement
The teacher gives comments to pupils on their correct response without using words. For example, this he does by nodding the head, smiling, patting, looking attentively at the responding pupil, and writing pupil's answer on the black boards. The teacher encourages the pupils to participate maximally in the development of the lesson.

Negative Verbal Reinforcement
The teacher gives comments on the incorrect or partially incorrect response by telling thatthe pupil's response is incorrect or making sarcastic remarks like "idiots", "stupid" and others. Such behavior of the teacher discourages pupil-participation and should not be used.

Negative Non -Verbal Reinforcement
The teacher shows his disapproval without using words. This involves, frowning, staring,and looking angrily at the responding pupil, when he gives wrong response. This type of behavior of the teacher creates fear in the minds of the pupil and decreases pupil-participation.

Wrong use of Reinforcement
This is the situation, where the teacher does not give reinforcement when the situation isdemanding encouragement.

Inappropriate use of Reinforcement
This is the situation when the teacher does not encourage the pupil with respect to qualityof his response. He uses same type of comment for every response.

SKILL OF USING BLACKBOARD

You are aware of the black board as a visual teaching aid and its significance in the teaching-learning process. Can you suggest the ways to make the black board work attractive, instructive and effective ? Please give suggestions in the space provided :
Legibility of Hand writing : How will you increase the legibility of your handwriting on the black board ?You are right if you suggest the following points :(1)
Each letter should be distinct

- : 1. There should be no confusion in the shape of the letters such as c, e,
- (2)Adequate spacing between two letters and two words.
- (3)The slantness of each letter should be nearly vertical.
- (4)Size of the letters should be such that they are legible from the end of the class
- 5)The size of small letters should be same and size of the capital letters should also be same
- 6)The size of the capital letters should be slightly greater than that of the small letters.(
- 7)Thickness of the lines should be of same width.

Neatness in Black Board Works :

You can make your Black Board neat and clean if you follow thefollowing points :

- (1)Straightness of lines :
- The neatness of the black board increases if you write in straight linesparallel to the base of the black board.
- (2)Adequate Spacing between the Lines :
- (i)The words/sentences should be written in straight lines parallel to the base of the black board.(ii)There should be adequate spacing between the lines.
- (3)Avoidance of Overwriting :
- In order to keep the black board work neat and clean there shouldbe no over writing.
- (4)Focusing the Relevant Matter :
- In order to keep the black board neat and clean :(i)Erase the unrelated and irrelevant work and work not required.(ii)Retain the relevant matter.
- (5)Appropriateness of Black Board Work :

The appropriateness of black board work includes the following points :

(i)Continuity in points :
The points of the lesson should be logically arranged one after the other in a sequence.
(ii)Brevity and simplicity :
Write only the salient points in a simple and clear language.
(iii)Drawing attention and Focusing :
Underline the important points or use colored chalk for drawing the pupils' attention.
(iv)Illustrations and Diagrams :
Illustrations and diagrams should be simple, large and clear to convey the idea easily and conveniently.

TOPIC 2 : MANAGING INSTRUCTION

1: CLASSROOM MANAGEMENT

MEANING

Classroom management is a term used by teachers to describe the process of ensuring that classroom lessons run smoothly despite disruptive behavior by students. The term also implies the prevention of disruptive behavior. It is possibly the most difficult aspect of teaching for many teachers; indeed experiencing problems in this area causes some to leave teaching altogether. In 1981 the US National

Educational Association reported that 36% of teachers said they would probably not go into teaching if they had to decide again. A major reason was "negative student attitudes and discipline".
According to Moskowitz & Hayman (1976), once a teacher loses control of their classroom, it becomes increasingly more difficult for them to regain that control Also, research from Berliner (1988) and Brophy & Good (1986) shows that the time a teacher has to take to correct misbehavior caused by poor classroom management skills results in a lower rate of academic engagement in the classroom. From the student's perspective, effective classroom management involves clear communication of behavioral and academic expectations as well as a cooperative learning environment.
Classroom management is closely linked to issues of motivation, discipline and respect. Methodologies remain a matter of passionate debate amongst teachers; approaches vary depending on the beliefs a teacher holds regarding educational psychology. A large part of traditional classroom management involves behavior modification, although many teachers see using behavioral approaches alone as overly simplistic. Many teachers establish rules and procedures at the beginning of the school year. According to Gootman (2008), rules give students concrete direction to ensure that our expectation becomes a reality.
They also try to be consistent in enforcing these rules and procedures. Many would also argue for positive consequences when rules are followed, and negative consequences when rules are broken. There are newer perspectives on classroom management that attempt to be holistic. One example is affirmation teaching, which attempts to guide students toward success by helping them see how their effort pays off in the classroom. It relies upon creating an environment where students are successful *as a result of their own efforts*.[1] By creating this type of environment, students are much more likely to want to do well. Ideally, this transforms a classroom into a community of well-behaved and self-directed learners.

PRINCIPLES OF CLASSROOM MANAGEMENT

- Building a good relationship between teacher & students
- Setting rules, routines & procedures
- Managing self
- Maintaining appropriate student behavior
- Techniques of motivating5

- Building a Good Relationship Between Teacher & Address}Students Show care}every students with name & Involve class} Use humor }concern Work hand-in-hand with students}in some decision making
- Setting Rules, Routines & Rules – general expectations}Procedures that are usually written on the paper.
- Setting Rules, Routines & Procedures Routine General Procedure expectations that General are unwritten or expectations for a actions that happen specific activity. repetitively within school day. Eg: State the clear Eg: Students stand instruction before up to greet the start any group teacher. activity
- Setting Rules Routines & Procedures Who are the persons that responsible in setting the rules, routine & procedures of the classroom? • Teacher & students When & how should we implement the rules, routines & procedures? • At the beginning of the school year, consistently & firmly. What is the purpose of setting the rules, routines & procedures? • For the smooth running of classroom teaching & learning.
- Managing Self Being optimistic & Maintain a professional image}determined
- Maintaining appropriate student behavior 1. Actively in monitoring student behavior • Develop "active eyes". • Walking among students. 2. Preventing is better than controlling • Enforce classroom rules promptly and consistently, from the very first day of school. • Make

clear to students the consequences of misbehavior. . Reduce classroom disruption • Creating a conducive learning environment by removing distracting material

TECHNIQUES OF CLASSROOM MANAGEMENT

Corporal punishment

Until recently, corporal punishment was widely used as a means of controlling disruptive behavior but it is now no longer fashionable, though it is still advocated in some contexts by people such as James Dobson.

Rote discipline

Also known as "lines," rote discipline is a negative sanction used for behavior management. It involves assigning a disorderly student sentences or the classroom rules to write repeatedly. Among the many types of classroom management approaches, it is very commonly used.

Preventative techniques

Preventative approaches to classroom management involve creating a positive classroom community with mutual respect between teacher and student. Teachers using the preventative approach offer warmth, acceptance, and support unconditionally - not based on a student's behavior. Fair rules and consequences are established and students are given frequent and consistent feedback regarding their behavior. One way to establish this kind of classroom environment is through the development and use of a classroom contract. The contract should be created by both students and the teacher. In the contract, students and teachers decide and agree on how to treat one another in the classroom. The group also decides on and agrees to what the group will do should there be a violation of the contract. Rather than a consequence, the group should decide on a way to fix the problem through either class discussion, peer mediation, counseling, or by one on one conversations leading to a solution to the situation.

Preventative techniques also involve the strategic use of praise and rewards to inform students about their behavior rather than as a means of controlling student behavior. In order to use rewards to inform students about their behavior, teachers must emphasize the value of the behavior that is rewarded and also explain to students the specific skills they demonstrated to earn the reward. Teachers should also encourage student collaboration in selecting rewards and defining appropriate behaviors that will earn rewards.

Systematic Approaches for classroom management

The Good Behavior Game

The Good Behavior Game (GBG) is a "classroom-level approach to behavior management" that was originally used in 1969 by Barrish, Saunders, and Wolf. The Game entails the class earning access to a reward or losing a reward, given that all members of the class engage in some type of behavior (or did not exceed a certain amount of undesired behavior). The GBG can be used to increase desired behaviors (e.g., question asking) or to decrease undesired behaviors (e.g., out of seat behavior). The GBG has been used with preschoolers as well as adolescents, however most applications have been used with typically developing students (i.e., those without developmental disabilities). In addition, the Game "is usually popular with and acceptable to students and teachers."

Discipline with Dignity

According to its founders, Discipline with Dignity is one of the most widely practiced behavior management philosophies in the world. Founded by Dr. Richard Curwin and Dr. Allen Mendler, the program is utilized in more than 12 different countries. Discipline with Dignity provides an in-depth flexible approach for effective school and classroom management. With a strong focus on developing responsibility, it is a comprehensive, practical program that leads to improved student behavior through responsible thinking, cooperation, mutual respect, and shared decision-making.

Tools for Teaching

Tools for Teaching is a classroom management method created and taught by Fred Jones on speaking tours and in the eponymous book series

Positive Classrooms

Positive Classrooms developed by Dr. Robert DiGiulio sees positive classroom management as the result of four factors: how teachers regard their students (spiritual dimension), how they set up the classroom environment (physical dimension), how skillfully they teach content (instructional dimension), and how well they address student behavior (managerial dimension).

Assertive Discipline

Assertive discipline is another systematic approach of classroom management. Lee and Marlene Canter discuss the ideas behind this approach in several published books.

Discipline without Stress, Punishments or Rewards

Discipline without Stress (or DWS) is a K-12 discipline and learning approach developed by Dr. Marvin Marshall described in his 2001 book, *Discipline without Stress, Punishments or Rewards*. The approach is designed to educate young people about the value of internal motivation. The intention is to prompt and develop within youth a desire to become responsible and self-disciplined and to put forth effort to learn. The most significant characteristics of DWS are that it is totally non coercive (but not permissive) and takes the opposite approach to Skinnerian behaviorism that relies on external sources for reinforcement.

Classroom management as a process

In the *Handbook of Classroom Management: Research Practice and Contemporary Issues* (2006), Evertson and Weinstein characterize classroom management as the actions taken to create an environment that supports and facilitates academic and social–emotional learning. Toward this goal, teachers must (1) develop caring, supportive relationships with and among students; (2) organize and implement instruction in ways that optimize students' access to learning; (3) use group management methods that encourage students' engagement in academic tasks; (4) promote the development of students' social skills and self–regulation; and (5) use appropriate interventions to assist students with behavior problems.
Dr. Tracey Garrett also describes classroom management as a process consisting of key tasks that teachers must attend to in order to development an environment conducive to learning. These tasks include: (1) organizing the physical environment, (2) establishing rules and routines, (3) developing caring relationships, (4) implementing engaging instruction and (5) preventing and responding to discipline problems. Classroom Management Essentials, created by Dr. Tracey Garrett, is the first

classroom management app for the iPad, iPhone and iPod touch that guides teachers through the tasks involved in the process of classroom management

Common mistakes in classroom behavior management

In an effort to maintain order in the classroom, sometimes teachers can actually make the problems worse. Therefore, it is important to consider some of the basic mistakes commonly made when implementing classroom behavior management strategies. For example, a common mistake made by teachers is to define the problem behavior by how it looks without considering its function[
Interventions are more likely to be effective when they are individualized to address the specific function of the problem behavior. Two students with similar looking misbehavior may require entirely different intervention strategies if the behaviors are serving different functions. Teachers need to understand that they need to be able to change the ways they do things from year to year, as the children change. Not every approach works for every child. Teachers need to learn to be flexible. Another common mistake is for the teacher to become increasingly frustrated and negative when an approach is not working.[
The teacher may raise his or her voice or increase adverse consequences in an effort to make the approach work. This type of interaction may impair the teacher-student relationship. Instead of allowing this to happen, it is often better to simply try a new approach.
Inconsistency in expectations and consequences is an additional mistake that can lead to dysfunction in the classroom. Teachers must be consistent in their expectations and consequences to help ensure that students understand that rules will be enforced. To avoid this, teachers should communicate expectations to students clearly and be sufficiently committed to the classroom management procedures to enforce them consistently.

TOPIC 3 : TECHNOLOGY IN THE TEACHING LEARNING PROCESS
1: CONCEPT, IDEA AND OUTLINE THE STEPS TO USE THE TECHNOLOGY IN TEACHING LEARNING PROCESS

Education is one of the most influencing systems of our society for the development and growth of the nation. The education system of a society reflects its image. Technology, in this regard, is one of the most critical issues in the present global era. In order gain a broad perspective, yet remain relevant to one's own situation, now there is a need to think globally and act locally. Despite the ubiquitous appearance of technology in societies around the world, we continue to grapple with how we might make the best use of Information Technology (IT) in our education system. Technology in acquiring knowledge and skill is an extremely essential component of education and training at all levels: primary, secondary, higher and professional education.
Technology in Education
INFORMATION TECHNOLOGY

Information Technology (IT) is the science that investigates the properties and behaviors of information, the forces governing the flow of information, and the means of processing information for optimum accessibility and usability. The field is derived from mathematics, logic, linguistics, psychology, computer technology, graphic arts, management, etc. IT implies telecommunications involving a combination of computers, networks, satellites, telephones, radio, television and the like. IT resources involve not only hardware (equipment) but also software (programmes), people, education, government and association/collaboration resources. Application of IT to education involves many disciplines related to computers in handling, processing, management, automation and

communication of information in the broader cultural and economic context of a society. Thus, technology in education encompasses one or more of the following modes:

Media and Audio-Visual (AV) communication,
e.g. alternative instructional delivery systems such as Radio, Educational Television (ETV), etc.

Vocational training tools, such as CBT (Computer Based Training), CAD (Computer Aided Design), etc.;

Computers and computer-based systems for instructional delivery and management, e.g. CAI (Computer Assisted Instruction) etc.

Internet/web based education e.g. not only educational information with text, graphics, video and courses offered by various web sites.

In fact, the state-of-the-art technology is currently being used in schools to integrate the senses and thoughts with feelings and actions. Such schools are called 'Smart schools.'

The Smart Schools
A need is felt to make students and teachers better equipped to enter the workforce, where use of technology is a standard practice. It will change the way teachers teach, may impact their status in the classroom and will definitely alter the way students learn by enabling them to develop numerous modes, techniques, tools and styles of learning. Technology can provide effective learning experiences by helping the learners perceive information, reflect on how it will impact their life, compare how it fits into their own experiences and think about how this information offers new ways to act. The present era puts forth the concept of a 'digital classroom' and 'smart schools' which are locally ground yet has a global out look. The digital classrooms and smart schools mainly aim at the following:

To change the teaching/learning process by encouraging teachers to shift to child-centered and more collaborative forms of learning in their classrooms;

To prepare students who are creative, numerate, literate, well-trained and readily retainable at any point in their development;

To ensure that all students understand the necessity of being able to live and work harmoniously with other people in their environment and progress of the society.

Thus, IT in education along with our traditional modes can be used for developing; Teaching Learning Materials (TLM) which make the classroom environment lively and conducive to learning. It can be used for individualized learning or self learning, as well. The use of Information Technology can engage learners in the four-step process as described by David Kolb in the book Experiential Learning (1997), where he identifies the steps in the following manner.
According to Kolb, learners have immediate concrete experiences that allow them to reflect on new experiences from different perspectives. IT can be used in our classrooms in the following ways:

Multimedia: Development in computers, communication, electronics and other
Multimedia tools provide a wide range of sensory stimuli. It is said 'I hear and I forget, I see and I remember, I do and I understand.' The animations, simulations, software packages to teach various subjects, speech, music, multimedia networks, image enhancements, etc. create virtual realities and

experience for the learners, which in turn, help in making learning a more direct, useful, and joyful experience and retain knowledge for a longer time.

Community resources: An electronic community allows students to engage in dialogue with each other, their teacher, experts and teachers in different parts of the country or the world. This can be done via two modes namely, asynchronous communication and synchronous communication. In asynchronous communication, exchanges take place in a delayed format. There are a number of activities that can be developed using asynchronous communication like presentations, free flow discussions on a topic, peer reviews, debates, message boards, bulletin boards, e-mails, listing servers, seminars, simulations, feed back on assignments, forums, learner led and threaded discussions. Where as, in a synchronous interactive environment, exchanges take place in real time.
Instant messengers, chat rooms, and MOOs are good examples. (A MOOs is a sort of sophisticated chat room, complete with its own architecture of interconnected rooms, stock pile of objects that can be manipulated, and a cast of interesting characters. Originally used for role-playing games, the MOOs have recently made its way into technologically progressive universities and secondary schools.

Individualized instruction: Technology can be used for individualized instruction in order to bridge the gaps between the teaching styles and the learning styles. The use of technology can be made to address the visual learners, auditory learners and kinesthetic learners. In an ordinary classroom with one teacher, it is difficult for the teacher to respond and provide feedback to each student. The programmed instruction models as suggested by Skinner can be used to provide learners learn at their own pace and give immediate feedback.

Audio-Visuals and Animations: Audiovisuals, video conferencing, short animations, virtual reality, etc can be used in teaching learning process. The abstract ideas can be focused upon and understood by means of visuals from different point of views. To illustrate the chapters / topics of the respective subjects can be taught by PowerPoint presentations. The Ministry of Human Resource Development, Information and Broadcasting and the Prasar Bharti have launched the Educational TV channel of India 'Gyan Darshan' on 26th January 2000. The Central Institute of Educational Technology a constituent unit of NCERT also provides educational videos and audio programs for various stakeholders at school education level. All these attempts hope to have a positive impact on learning.

Digital devices: The digital devices like cameras, scanners can be used for instruction. For instance digital photographs and recordings can be used for electronic and virtual field trips, science experiments and demonstrations, etc. The portable scanners can read text from books, documents, research papers, newspapers and the information scanned can be pasted at ease for refrence and documentation. The other digital devices like digital blackboards, electronic pens and touch screens etc. can also be used to enhance learning. Studies reveal that use of technology motivate students to learn and inspire teacher to explore how best a technology fits into his / her lesson.

Personal Digital Assistants (PDA): The PDA wireless devices are used as e-learning tools allowing the learners to access information any time, any where. It is observed that, there is a shift from the E-learning to M-learning (which includes learning via. mobile computation). The use of Bluetooth and infrared technologies has made it possible to transfer information in fractions of seconds.

Online materials: The online materials used in the educational setting are as listed below.
Database: Database is a good source of materials put up by the government, libraries and educational institutions. It contains extensive information on graphic interface, websites, electronic page layout, graphics, multimedia and animated designs. The websites like www.intschool-leipzig.com,

www.discovery.com, www.nationalgeographic.com, etc. provide information that serve educational purposes.

Journals: There are many e-journals available on the web. Facilitators can include online journals as an integral component of their learning materials with knowledge that can be regularly updated and links that can remain active. Online journals like www.rsc.org, www. journals.cambridge.org, etc., are a good source of information for helping learners to complete projects, assignments and other research work.

Software libraries or Digital libraries: Software libraries contain programs that the learners may download to their own computers. However some websites require specific viewers and plug-ins before learners can view the website. There is a range of software available from many websites on education, which includes downloads for preschool, grade school and high school. The software library includes e-books, interactive CDs and teaching tools. The famous websites like www.chemsoc.org, www.library.thinkquest.org, www.iisc.ernet.in, etc. allow downloads of interactive CDs in various subjects. The knowledge mapping software designed to capture and organize brainstorming sessions into concepts and knowledge webs can also be used. A teacher can pose a problem before the students. The students thereby can create a diagram of ideas, web of ideas using hypertext and hypermedia for assembling and linking information to present their understanding of almost any topic. Simulated software can also be used to explore student's prior knowledge. The student makes choices while interacting with the software. Observing the choices and discussion made by the students enables the teacher to explore the student's prior knowledge and understanding about the same.

Interaction patterns: Some schools in India have started using the internet and intranet facilities to interact/ communicate with each other. The following patterns have been observed.

Teacher-parent interactions: William D. Muiihead (2000) observed that online conversation with parents involved greater discussion about pedagogical issues and often focused on student learning than they had been in traditional school settings. Voice mail and other messaging systems help in encouraging both parents and students to leave messages to their teachers. In addition the working parents and parents of hostellers have an opportunity to interact with the teachers at ease. The parents can also have the direct access to the classrooms instead of having their children's educational experiences filter and interpreted through the eyes of their children.

Teacher- teacher interactions: Teachers around the world can share their instructional activities and experiences with each other. The chat rooms like innovative teaching on www.yahoo.com and other websites like www.teachingideas.com, www.innovative teaching .com, etc. serve this purpose.
Teacher-student interactions and student-student interaction: this helps in creating a learning environment. The students can decide a time to meet online and discuss the various aspects of the course on weekends and holidays.

Online testing: The teacher may prepare a question bank or an objective type test and place it on the network. The students answer and submit the test. The immediate feedback and scores can be obtained by the student. The evaluation can be done by means of assignments in the form of presentations, documents, and audio visuals, drill and practice, online quiz in various subjects, etc.

A school website: A school website is an innovative way of creating learning environment as well as involving the society in the same. The major components of the classroom website are the home page

which is linked to the student page, parent page, teacher page, teaching philosophy page and professional page.
Above mentioned are ways in which technology can be used in educational setting. The technology when used in teaching the curricula subjects like English, Science, Mathematics, Social studies helps the students see the unseen, to test theoretical concepts, comprehend abstract ideas and communicate effectively. IT has also made a remarkable contribution to the field of distance education making it is possible to learn anytime, anywhere. However, all the advances in technology and its impact on instructional modes have changed the role of a teacher from an instructor to a facilitator and creator of a learning environment.

Role of a teacher in the present era: The starting point of a digital classroom is a teacher. Teachers must be trained to effectively use the technology for planning and student instruction. The role of the teacher has subtly shifted from being the sole 'provider' of knowledge to being a facilitator as the student explores for himself, the expansive world of knowledge. From being a 'Sage on the Stage', to being a 'Guide by the Side'. In today's world, life long learning has become a critical determinant of success. And hence, more than mastering various competencies, the key skill required is learning how to learn. The Learning Management System (LMS) harnesses the potential of technology to improve learning outcomes and to prepare students for the accelerated changes in the world in which they live. According to the UNDP statistics in the year 2001, almost 80% of the teachers in developing countries feel that they are not prepared to use the technology. However, efforts are been made to make the teachers aware of the use of technology through pre-service and in-service courses. In addition, Intel® Teach, Edutech programs also aim towards making the teachers techno savvy and teach using the computers. Hence, the use of IT in teaching requires competencies on the part of the teacher and has indeed made the profession more challenging.
From above it is clear that the benefits of technology in the classrooms cannot be denied. Some factors that affect the effective use of technology for teaching and learning are:

Leadership qualities and attitudinal change: It is especially important at the school level for the principal and teachers to have a vision of what is possible through the use of technology, and be able to work with others to achieve the vision. Without this vision, and the translation of the vision into action, lasting school improvement is almost impossible.

Time consuming: It is true that in the initial stages, integrating technology into teaching and learning is a slow, time consuming process that requires substantial levels of support and encouragement for educators. But as the teachers gain proficiency and become adept at technology usage, technology becomes a smart tool that allows them to work faster and better.

nfrastructure remains a serious barrier to technology adoption: It is very difficult to focus on integrating technology to support learning, if you cannot overcome basic technological equipment and facilities issues. Schools that serve students in economically backward areas typically have greater barriers than schools in affluent communities in getting the basics in place.

TOPIC 3 : TEACHING LEARNING PROCESS AND TECHNOLOGIES CONCEPT, IDEAS AND OUTLINE THE STEPS TO USE THE TECHNOLOGY IN THE TEACHING - LEARNING PROCESS, ESPECIALLY FOR: EDUCATIONAL SATELLITES, EDUCATIONAL VIDEOS/AUDIOS, COMPUTERS, INTERNET AND MOBILE TECHNOLOGY, INTERACTIVE WHITE BOARDS AND TABLETS.

"Children and young people are growing up in a vastly changing context. No aspect of their lives is untouched by the digital era which is transforming how they live, relate and learn"[10] Some examples of these changes in the classroom include Problem Based Learning, Project-based Learning, and Inquiry-based learning. Together they are active learning educational technologies used to facilitate learning. Technology which includes physical and process applied science can be incorporated into project, problem, inquiry-based learning as they all have a similar educational philosophy. All three are student centered, ideally involving real-world scenarios in which students are actively engaged in critical thinking activities. The process that students are encouraged to employ (as long as it is based on empirical research) is considered to be a technology. Classic examples of technologies used by teachers and Educational Technologists include Bloom's Taxonomy and Instructional Design.

EDUCATIONAL SATELITE

Millions of illiterate people in remote, rural India could soon have access to an education, as a satellite devoted exclusively to long distance learning was launched on Monday. It is the world's first dedicated educational satellite, according to the Indian Space Research Organisation (ISRO).
India launched the $20 million, 2-tonne EDUSAT from the Satish Dhawan Space Centre at Sriharikota, a tiny island in the Bay of Bengal. The satellite is the heaviest ever launched by an Indian-made rocket - the new Geosynchronous Satellite Launch Vehicle (GSLV), which cost $33 million.
About 35% of the country's billion-plus population are illiterate, a 2001 government census showed. "India will require 10,000 new schools each year and meeting the teaching needs on such a scale [by conventional methods] will be impossible," Madhavan Nair, chairman of ISRO, told **New Scientist**.
To date, India has used both of its multi-purpose INSAT satellites to provide long-distance education information alongside their telecommunications, broadcasting and weather-forecasting functions.

VIRTUAL CLASSROOMS

But EDUSAT's dedicated function will substantially improve the service provided. It will use the virtual classroom concept to offer education to children in remote villages, quality higher education to students in areas without access to good technical institutes, adult literacy programmes and training modules for teachers.
"It is a unique mission and we are happy to have achieved it," Nair says. H P Dixit, vice chancellor of Indira Gandhi Open University, added: "It will revolutionise education in our country."
EDUSAT carries six KU-band transponders and six extended C-band transponders. All but one of the KU-band transponders will be dedicated to specific regions of India, while the rest of the transponders will provide blanket coverage for the country.
The satellite will utilise an antenna with a 1.2-metre reflector to direct the KU-band spot beams towards their intended regions. This will enable information to be broadcast in relevant local languages - India has 18 official languages and over 400 dialects. The educational programmes can be viewed on any television set through a simple low-cost receiver costing about $65, Nair says.

OPERATIONAL PHASES

Once EDUSAT is commissioned in two months' time it will initially provide one satellite link per beam, with each link catering for up to 200 classrooms. When fully operational, 25 to 30 satellite links will broadcast to about 5000 remote terminals.

Monday's launch marks several firsts for India's space programme, says Nair. EDUSAT is India's first satellite dedicated for education. Others being planned include AGRISAT, to address the country's agricultural needs, and HEALTHSAT, for providing telemedicine services.
It is also GSLV's first operational flight. India will no longer depend on Europe's Ariane rockets to launch satellites of up to 2 tonnes, though it will continue to use them for heavier spacecraft.

COMPUTERS IN EDUCATION

The use of computers today, is not restricted to only office desktops or laptops. In a matter of fact, computers are used in our daily lives ranging from appliances to car engines and video games thereby making it one of the most important asset in our lives with the education system not an exception when it comes to computers.

The growth of the computer industry has sky-rocket over the past few years and has been quiet remarkable. Today, it is the fastest growing industry in our economy. Many schools are now equipped with computers for educating their students thereby making computers an integral part of education system. Information Technology classes are also added as a "bonus" to enhance the students' skill in using a computer. Teachers and professors use computers for teaching, giving presentations, assessing various data banks, maintaining database of students, communication in the form of e mails or chat, browsing the Internet and to prepare students with the reality & integrity to have a competitive edge in the global job market. Computers have revolutionized teaching and learning in a big way. They can watch various films on history, geography, wild life, science and encyclopedias with the use of computers to enhance the students' learning experience with great sound and excellent picture quality and commentaries on Compact Discs' or DVD's as well as from the internet.

The use of computers also includes the use of internet which has widen the education system to even more possibilities. The internet provides a great deal of access through various information on any subject or research and any other technical information with ease. Moreover, a computer is patient and non-judgmental, which can give the student motivation to continue learning. According to studies conducted, the effectiveness of computers used for instruction, students usually learn more in less time when receiving computer-based instructions and develop more positive attitude towards them selves.

MOBILE TECHNOLOGY IN EDUCATION

As the school year begins, mobile technology's impact on education is evident. In a recent study, conducted by Pearson Foundation, the majority of students say that technology makes learning more fun, it helps them study more efficiently and they prefer it over traditional textbooks. Experts say mobile technology cultivates greater engagement in today's classrooms, enables easier contextual learning outside of the classroom, and gives many students the opportunity to develop and practice important technology skills.
Education experts and industry leaders agree that technology continues to have a significant impact on education. Intel's latest 60 Second Insights videos feature Mike Bridge from PASCO Scientific, Din Hieman of BrainPOP, Jim Bowler from Adaptive Curriculum, and George Yaghmour of LEGO Education focusing on the learning benefits of mobile technology in the classroom, and how education technology like mobile apps and e-textbooks are making positive changes in education a reality. "Technology and new devices have provided a whole new way of teaching," Jim Bowler stated. For example, "Science today uses modern technology, computers and sensors — everything is a technology based approach. Learning can now be — not just anywhere — but everywhere and all the time," observes Mike Bridge.

In a recent 60 Second Insights interview, Patrik Regardh of Ericsson, talks about how mobile technology is impacting education from an industry point-of-view. "Information and technology have brought us to the point where we can see that the core concept of what it means to be well-educated has changed. It is shifting from educating to learning, making it much more of a personal experience. We can see different facets of learning, which is more tailored or geared toward the way which your brain works."

60 Second Insights looks at how advances in mobile technology and consumer mobile device usage affect a wide variety of industries, including art, business, culture, social networking, exploration, design, photography, film, music, and more. Viewers get a glimpse of how thought leaders from various industries and backgrounds leverage mobile technology to innovate and ultimately impact consumers' lives and the ways in which they use technology. To date, the 60 Second Insights videos have focused on everything from how mobility impacts society and spurs innovation to the security and privacy risks associated mobile device use.

INTERACTIVE WHITE BOARD AND TABLETS

Interactive whiteboards have become popular over the last few years, and it appears that their use will continue to grow exponentially. Indeed, books like *The Interactive Whiteboard Revolution* (Betcher & Lee, 2009) attest to the depth and breadth of change that this tool can promote in classroom practice.

For those who may still be unfamiliar with the technology, an interactive whiteboard is a large display that connects to a computer and a projector. The projector projects the computer's desktop onto the board's surface, where users control the computer with a pen, finger, or other device. The board is typically mounted to a wall or floor stand. Various accessories, such as student response systems, enable interactivity.

Although many teachers have enthusiastically adopted interactive whiteboards, little research is available on their effect on student achievement. However, in a study that involved 85 teachers and 170 classrooms, the teachers used interactive whiteboards to teach a set of lessons, which they then taught to a different group of students without using the technology (see Marzano & Haystead, 2009).

What the Research Found

The study results indicated that, in general, using interactive whiteboards was associated with a 16 percentile point gain in student achievement. This means that we can expect a student at the 50th percentile in a classroom without the technology to increase to the 66th percentile in a classroom using whiteboards.

In addition, three features inherent in interactive whiteboards have a statistically significant relationship with student achievement. The first is the learner-response device—handheld voting devices that students use to enter their responses to questions. The percentage of students providing the correct answer is then immediately displayed on the board in a bar graph or pie chart. Using voting devices was associated with a 26 percentile point gain in student achievement.

A second feature is the use of graphics and other visuals to represent information. These include downloaded pictures and video clips from the Internet, sites such as Google Earth, and graphs and charts. Use of these aids was also associated with a 26 percentile point gain in student achievement.

A third feature is the interactive whiteboard *reinforcer*—applications that teachers can use to signal that an answer is correct or to present information in an unusual context. These applications include dragging and dropping correct answers into specific locations, acknowledging correct answers with virtual applause, and uncovering information hidden under objects. These practices were associated with a 31 percentile point gain in student achievement.

What We Saw in the Classroom

One of the more interesting findings from the study was that in 23 percent of the cases, teachers had better results *without* the interactive whiteboards. To determine why this occurred, we examined video-tapes of teachers using the boards. These disclosed some potential pitfalls in using the technology:

- *Using the voting devices but doing little with the findings*. In many classrooms, teachers simply noted how many students obtained the correct answer instead of probing into why one answer was more appropriate than another.
- *Not organizing or pacing the content well*. In these cases, the teachers incorporated video segments from the Internet or images intended to represent important information in their digital flipcharts. However, they ran through the flipcharts so quickly that students, although impressed with the graphics, did not have time to analyze and interact with one another about the content.
- *Using too many visuals*. Digital flipchart pages were awash with visual stimuli; it was hard to identify the important content.
- *Paying too much attention to reinforcing features*. For example, when teachers who had worse results with the technology used the virtual applause feature to signal a correct answer, the emphasis seemed to be on eliciting the applause rather than on clarifying the content.

Getting the Most Out of the Technology

This study, as well as what we know about good teaching in general, suggests how teachers might use interactive whiteboards more effectively. I recommend the following:

- Teachers should think through how they intend to organize information. They should group information into small, meaningful segments *before* they start developing the digital flipcharts. Once they've organized the content, then they can design the flipcharts to complement the organization. To ensure that they don't run through the flipcharts too quickly, teachers can insert flipcharts that remind them to stop the presentation so students can process and analyze the new information.
- Digital flipcharts should contain visuals, but those visuals should clearly focus on the important information. Also, no single flipchart should contain too many visuals or too much written information.
- After asking a question and getting student responses using voting devices, the teacher should typically discuss the correct answer along with the incorrect answers, making sure to elicit opinions from as many students as possible.
- When using reinforcing features like virtual applause, teachers should make sure that students focus on *why* an answer is correct or incorrect. Although these features can produce high engagement and certainly enliven the atmosphere in a classroom, they can also be distracting if used without a clear focus on essential content.

Interactive whiteboards have great potential as a tool to enhance pedagogical practices in the classroom and ultimately improve student achievement. However, simply assuming that using this or any other technological tool can automatically enhance student achievement would be a mistake. As is the case with all powerful tools, teachers must use interactive whiteboards thoughtfully, in accordance with what we know about good classroom practice.

TOPIC 4 : INSTRUCTIONAL MEDIA

CONCEPT AND NEED :

Media are the means for transferring or delivering messages. It is called the educational medium when the medium transfers message for the purpose of teaching. Today, education focuses on the learner's participation and concrete idea of teaching materials. For the sake of perfect objective, teachers of each level are encouraged to adopt teaching media. "Are teaching media really so effective?" "Is it worthwhile to spend money, time and effort to design and produce teaching media?" These two questions always bear in teacher's mind. The author-tried to answer these bothersome questions from the viewpoint of learning theories, teaching communication and the coordination between teaching and learning. After document reviewing and inferencing, the writer found the answer is affirmative. Teaching media are very important. Without application of teaching media in classroom, none of learning theory priciples could be fulfilled. It would take a lot of exertion to reach

a good teaching communication without application of teaching media. It's impossible to coordinate teaching with learning without using media. Though it spends time and effort to design, produce and select media, the teacher's endeavor is worthy, and half the work with double the result.

Types of Media and their Application in Practice Teaching

There is a profusion of instructional media, which can be used by trainee teachers to enrich their classroom teaching. The plethora of media offers trainee teachers considerable opportunities to make their teaching more effective and efficient. Effectiveness in this context implies how well educational goals and objectives are achieved, while efficiency refers to how instructional media are utilized to achieve teaching goals and objectives. Generally, media are categorized as print, non-print, audio, audio-visual electronics, non-electronics, and so on. Some of the instructional media considered relevant to trainee teachers in the classroom are discussed as follow.

Print Media:

The print media are some of the oldest media in education, this category of media are useful for informational or motivational purposes. They are used to convey verbal information through print. They form the most widely used media in education and they include textbooks, periodicals encyclopedia, newspapers magazines, file records minutes, and so on. They provide good source for trainee teachers to structure their lesson plans and notes. There are legions of textbooks on all areas of subject discipline. Sometime, they carry the main responsibility of organizing instruction and they can be used as basic instructional guide. Newspapers, magazines, documents, file record and so on, are also very relevant for disciplines in the social sciences, art, and the pure sciences. Information contained in them can be current. Almanac also provides useful source of medium for trainee teachers in their classroom. Print medium can be used to supplement other media with maximum effect. Print can also incorporate several other media, like pictures and graphic materials, thus serving as multi-media (Blythe-lord, 1991 and Kemp & Smellie, 199989).

Chalks and Chalkboard:

They can be used to present instructional content as immediate sketchbook, and they are essentially temporary, for delineating ideas. When integrated with other media, they can give full explanation. However, most teachers in Nigerian schools do not use chalk and classroom presentation in all subject areas.

Neatness of the chalkboard must be ensured through the use of guidelines, templates, compasses and straight-edged rulers. Chalkboard should be divided into sections. Lettering should follow the occidental form of lettering, that is from the left sector of the chalkboard to the right, or use of only the middle portion of the chalkboard. Chalks to be used for teaching must ,be in form for wedges and cones, so as to give uniform thickness of line. Coloured chalks may be used when it is appropriate to show distinction among parts of drawings and for emphasis of teaching points (Blythe-Lord, 1991 and Jaroiimek, 1971).

Graphic Materials:

They are non-photographic, two-dimensional materials designed to communicate a message to the learners. They may incorporate symbolic visual and verbal cues. Graphic media include drawings, charts graphs, posters, among others. Drawings are more finished and representational arrangement of lives to represent persons, places, things, and concepts. Charts are abstract representations of abstract relationships, like tabular charts, time line, and classification charts. Graphs are visual representation of numerical data, like polar graphs, scatter graph, line graph, and so on. Graphs are useful for trainee teachers in subjects like economics, geography, and mathematics. Posters are also useful graphic media using combination of lines, colour and texts. Cartoons are line drawings that can be used to

encourage students and enliven instruction. Flip charts and well charts can be used as speaker support and key point reference. They should be designed in a way, to ensure that they are large and short in content.

Realia:
These are real things or objects (as opposed to representation or models) as they are without alteration. They include coins, tools, artifacts, plants and animals among others. Specimen, exhibits, and cut-away objects are some of the classifications used for realia which have great value in virtually every subject. They can be relevant in subjects in the sciences (biology, physics, chemistry), history, economics, and so on. For instance, the of realia by a trainee biotogy teacher can do much promote student's interest in life science and care for insects, fish and animals. Students would also become much more involved in the classroom learning. Realia eliminate distortion in student's knowledge on the topics being taught. Furthermore, using the display and exhibit method, realia provide students with opportunities for "hand on" interactions and experience (AECT, 1977, Blythe-Lord, 1991 and Kemp & Smellie, 1989).

Still Pictures:
They are non-projected, non-motion pictures in opaque form. They are photography representation of people, places or things, and can be used to present information in all subject areas: They are readily available for resourceful trainee teachers, in magazine, calendars, illustrations from textbooks, newspapers, and so on. When still pictures are properly mounted on cardboard, with proper edges, as individual pictures or in composite form, that is, combination of one or more pictures to produce a single visual, they can be used to pass across wide range of information (Kemp & Smellie, 1989 and Wittich & Schuller, 1973).

Models and Mock-Ups:
Models and mock-ups are three-dimensional representation of a real thing. Like actual objects, a model or mock-up can be looked at from all sides as it has breadth, length and depth. Models are representations of real things that are infinitely large, like earth or solar system, or real things that are small, whether animate or inanimate. They may be complete or real things that are small, whether animate or inanimate. They may be complete in every detail or more simplified than the original. Some models can be disassembled for learners' close observation.
On the other hand, mock-ups are differentiated from models by their usually larger size and by their moving and operating parts. Models and mock-ups have wide application in such subjects like physics, geography, biology, chemistry, and so on. Trainee teachers can buy commercially produced models or they can be improvised, using paper match (Blythe-Lord, 1991, Kemp & Smellie, 1989 and Wittch & Schuller, 1973).

Audio Media:
Audio media offer a wide range of opportunities for group or individual use. They can be used to deliver instruction involving verbal information, and also for guiding the learning of intellectual and motor skills. With the availability of small compact cassette recorders, audio medium can be produced by trainee teachers. It can also be used to supplement other media like filmstrips and slides. They are also relevant for learning objectives related to the affective domain of learning. Audio recording can provide response drill in mathematics, and language. Furthermore, several copies of the media can be produced easily. Audio medium is equally good for all types of instruction, from the precision of speech to the mental imagery formed by music and sound effect (Kemp & Smellie, 1989 and Wittich & Schuller, 1973).

Overhead Projectors:
Using the overhead projector, transparent materials are projected so that a group can see. It is simple to operate, and it is a versatile media for teachers to use. Transparency can face the audience from the front of the room and maintain eye-to-eye contact with students while projecting transparencies in a lighted room (Blythe-Lord, 1991 and Kemp & Smellie, 1989).

Slide Projectors and Filmstrip Projector:
Slide projectors are used to project slides-small format photographic transparency in colour or black and white, individually mounted and used to transmit instructional content. On the other hand, filmstrip projectors project images container in filmstrips, which are series of small slides photographed in permanent sequence on a 35mm or 16mm film either in colour, or black and white. Some filmstrip .projectors can also be used to project slides. Trainee teachers can use filmstrips and slides to enrich their instruction. They are less expensive, easily handled and stored for future use. They are adaptable for use in every subject area, and the rate of presentation for classroom use\can be controlled by trainee teachers using remote, reverse, and advance mechanisms. Their presentations can be accompanied with print or audio recording (Blythe-Lord, 1991, Erickson & Curl, 1972, Farrant, 1981 Kemp & Smellie, 1989 and Wittich & Schuller, 1973).

Film Projector and Video Player/Projector:
Film projectors and videotape projectors are used to project motion pictures, when motion is a significant factor of a subject. Educational films are in black and white, and colour. There are also sound and silent motion pictures. Videotape availability has further widened the possibilities for the use of motion pictures, as they can be shown through monitor, that is, cathode ray tube, or projected using video projector or through the digital projector, for group use.
Motion pictures are relevant for all subject disciplines, in sciences, art, social sciences, and physical education. Motion pictures when accompanied by sound, may constitute a very effective way of emphasizing distinctive features for the tasks, which needs distinguishing the visual aspects of simulation. Motion pictures are also very good for ensuring students' positive attitude toward the subject of instruction. They can also be used to modify students' attitude in such areas like ecology, good work habit, hygiene in health education, and so on (Blythe-Lord, 11991 and Wittich & Schuller, 1973).

Multi-Media Presentation:
This involves combinations of visual materials. It is a learning resource package, which can be effective when several media are used concurrently for specific instructional purposes. When two or more pictures are projected simultaneously, on one or more screens for group viewing, the compound concept multi-image is used. However, when two or more different types of media are used, sequentially in a single instruction or for self-paced learning package, the term multi-media is used. Using multi media or multi-image, a large amount of information can be passed across to students, and high interest can be created in students. Furthermore, different media can be tailored towards different objectives outlined for the lesson (Blythe-Lord, 1991, Kemp & Smellie, 1989, and Wittich & Schuller, 1973).

THE USE OF INSTRUCTIONAL MEDIA IN PRACTICE TEACHING

While the instructional value of media in enriching the teaching of students by teachers cannot be doubted, media in themselves cannot assure good teaching. Their effective use can be through the integration of media in teaching practice by trainee teachers. The following guidelines can be

followed to ensure successful integration of media in practice teaching (Blyth-Lord, 1991, Farrant, 1981, and Michealis, 1975).

(a) A trainee teacher should consider the entire school environment as a laboratory for students' learning and the practical application of his/her knowledge. Therefore, instructional media selection, arrangement and re-arrangement of learning environment, and the use of materials and equipment to promote learning are basic in self-contained classroom.

(b) The entire neighborhood of the school and community resources should be viewed and utilized as a laboratory for student learning.

(c) Media should be designed, produced, selected, or used as resources to attain specific instructional objectives. That is, objectives should not be tailored to the media, rather, objectives should guide media utilization.

(d) Media to be used by a trainee teacher should be considered in terms of concreteness or abstractness of experience which the media would produce. Trainee teachers should be sensitive to the changing situation within the classroom and have alternative media to meet individual differences of the learners.

(e) Media should be selected for instructional purpose based on specific criteria which are directly related to instructional planning. These include:

(i) the nature of the audience, in terms of chronological age, sex social, cultural, environmental, and economic background of the learners, (ii) entry level, (iii) motivation, (iv) the physical abilities or disabilities of learners, (v) learners long-established perception and cultural characteristics, (vi) the objectives to be achieved (whether cognitive, affective or psychomotor), (vii) nature of the subject content, (viii) physical qualities of the media, that is, the attributes, authenticity and significance of the content, (ix) cost of the media, (x) expected role of students, and (xi) the mode of instruction among others.

(f) Instructional media should be utilized in the content of a variety of teaching strategies. Use of resources should be observed and guided. The possibility of using multi-media should be considered. This is because a single media may not be adequate to achieve all the objectives outlined for a lesson.

(g) Media utilization should require learners' response. Thus, when designing any media, the trainee teacher should build into the programme things that will ensure learners' participation, through discussion, project, dramatization, and so on.

(h) Evaluating the use of media can be done through observation, individual project, and use of questionnaire. The information from the evaluation can be used to improve on media usage in subsequent lesson.

TOPIC 4.2 : USE OF CHARTS, MODELS AND GRAPH IN TEACHING LEARNING PROCESS AND RELATED SKILLS TO USE THEM

- **CHARTS**

Teachers use charts to stimulate and record students' prior knowledge, experience, and attitudes about a topic, and to encourage further questions about it.

Because the three flexible categories organize student learning, K/W/L charts are often used throughout the study of a particular topic or unit. The students note what they are learning as they learn it, and then have a graphic record of their progress. the chart also builds community, because the students pool information, compare notes, and refine questions together.

For teachers using an inquiry-based approach to teaching and learning, K/W/L charts can be particularly useful. For example, in Brownfield's class, the K/W/L chart grounds inquiry into the topic of Indian residential schools. She asks the students to identify questions for individual research

projects under "What I want to know." Teachers can help students refine specific, personal questions into larger, more general questions, if need be. The students look at questions to determine which have factual answers (dates, statistics, etc.), conflicting answers, or no answer. (See Student Work.)

Benefits of K/W/L Charts

- K/W/L charts help students activate their prior knowledge and identify their current attitudes. They also provide teachers with valuable information about what the class may already know (or think they know) about a topic.
- Organizers like K/W/L charts provide graphic documentation of student learning that both students and teachers can easily understand, and thus can involve students as partners in the learning process.
- Because they can be individual or collaborative, K/W/L charts are very flexible formats for homework assignments, small-group work, or individual journals.

- K/W/L charts support students in the inquiry process of identifying and refining questions, and provide space to record research.
- K/W/L charts give every student a "way in" to a class discussion, and to looking at his or her own learning.
- K/W/L charts allow teachers to see what cultural and/or historical misconceptions students may have. (The first category is deliberately titled "What I Know or Think I Know" so that students will list as many things as they can while recognizing that these "facts" may be subject to question.)

2 . MODELS AND GRAPHS.

A model is a representation of an idea, object, event, process or system (see below for examples of types of models).
Models and modelling play a crucial role in science practice. One justification for their inclusion in science teaching is that they contribute to an 'authentic' science education, where teaching reflects the nature of science as much as possible.

Learning challenges when using models

Models are human inventions, based on an incomplete understanding of how nature works. Models concentrate attention on specific aspects by using something that is familiar as a simile to explain or describe something that is not familiar.
Consequently, most models are limited or 'wrong' in some key aspect. This can create learning problems if students take a different meaning from the model than that intended by the teacher. For example students may:

- learn the model rather than the concept it is meant to illustrate
- fail to distinguish between a mental image and a 'concrete' model
- lack the necessary visual imagery to understand the model
- lack awareness of the boundary between the model and the reality the model is representing
- mix up aspects of two or more different models
- miss some key attributes and so misunderstand the purpose of the model
- continue to use the least sophisticated of a range of models, even when they have been introduced to more advanced models

- find it difficult to apply the model in different contexts.

How to overcome learning challenges

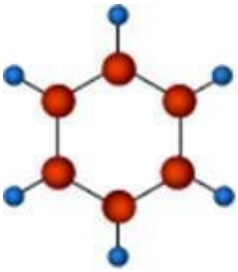
Overcoming such learning challenges requires careful teaching that focuses quite consciously on the model as an idea, object, event, process or system. A new model could be introduced in a sequence such as this:

1. Introduce the idea that the model is intended to show and find out what ideas students already have about that event or pattern.
2. Carry out the modelling activity.
3. During the activity, or at the end if more appropriate, talk about how the model/modelling activity is 'like' what would really be happening and how it is 'different'.
4. The analysis of the model could also include a discussion of how the model shapes a particular view of 'reality'. Such an analysis would focus on:
    - identification of the positive features of the model (what is deliberately chosen to represent 'reality')
    - identification of the negative features of the model (what is deliberately excluded)
    - identification of the neutral features (what is ignored or not commented on).
5. Return to the 'big idea' at the end and let the students explain to you the sense they have made of the activity. Older students could analyse the model for themselves after some practice runs and their comparisons could be used to assess their new learning. Students may continue to need help do this for every new model used.

From mental model to expressed model

Mental models are used to describe and explain phenomena that cannot be experienced directly. Scientists use mental models to think through abstract ideas and theories.
Mental models become expressed models when they enter the public domain through action, speech, and writing. They are often represented as analogies and metaphors.
Examples of this process are:

Structure of the benzene molecule

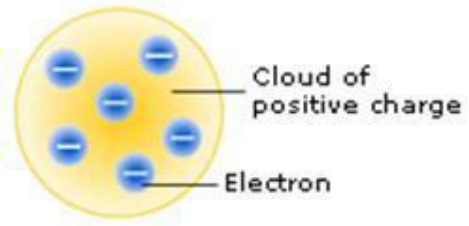


The ring structure of the benzene molecule
August Kekule was puzzled by benzene, a 6-carbon molecule. There are many stories of his famous dream where he saw dancing snakes biting their own tails, and realized the benzene molecule could be seen as a ring structure rather than a straight chain. This was his mental model.

The expressed model he made as a result of his 'dream' helped others understand how the atoms could fit together.

The composition of atoms

When John Dalton started thinking about atoms he thought of them as if they were bowls or balls – this was his mental model.
His experiments in 1802 supported the theory that matter was made of particles and he pictured them as small billiard balls. Using this model he was able to show how each element could be represented as being made up of the same kinds of atoms, and that compounds could be explained as being made up of atoms in specific ratios – this was his expressed model.



The 'plum pudding' model of atom composition
J.J. Thomson studied atomic theory and cathode rays, and postulated the existence of small negative particles we now call electrons. He realised that the 'billiard ball' model where atoms had the same composition throughout didn't explain the existence of electrons. His expressed model showed atoms having negative electrons dotted throughout the positive atom like plums in a pudding.

Types of expressed models

Expressed models used in science communication and teaching include: two-dimensional models, such as those found in textbook diagrams; three-dimensional models such as scaled miniatures (a smaller version of large structures); scaled enlargements (an enlarged view of something too small to be seen); and working models. For example:

Leonardo da Vinci's "Vitruvian man": A two-dimensional anatomical model

- Leonardo da Vinci created many wonderful anatomical drawings (two-dimensional models) and these helped further medical understanding.

- The internal structure of the Earth at Te Papa Tongarewa's Awesome Forces exhibit is a scaled miniature. The model shows the layers of the Earth's interior in what we believe to be their correct proportions.
- The structure of a cell can be represented as a scaled enlargement.

Digital models

Digital models include animated models and simulations. Simulations allow students to simulate a situation, such as making choices about land use. Animated models may also allow students to control variables to see what impact each variable has. Digital models intended for learning are called Learning Objects. Teachers can find a wide variety of Learning Objects suitable for use with New Zealand students of all ages in Digistore/Te Pataka Matahiko . These include animated models of science concepts such as cell division and tectonic plate movement, through to simulations of decisions about land use and factors which influence the UV index.

UNIT IV : EDUCATIONAL EVALUATION
TOPIC 1 : CONCEPT : EVALUATION ASSESMENT MEAURMENT AND TESTING, NEED AND IMPORTANCE OF EVALUATION

Child as he develops under the care of the teacher. Records, however, should not beconsidered as ends but as service tools to help the teacher understand the learners to interpret behaviour, and to define immediate and long-term needs.
Evaluation should be comprehensive. It should take into account the learner'sindividual character, his background, and the immediate environmental factors Data should include the individual's health physiologic need s, emotional adjustments, mental characteristics, talents and aptitudes, values and attitudes social relationship and competence, ability to function effectively in his environment and in the whole realm of his interest, aspirations, and goals. Records should Show The learner as a developing personality, including both positive and negative aspects of the learner's development.

Evaluation uses a variety of instruments, tools, and techniques. The se instruments should be valid, reliable, and practical from the standard points of time effort, and facilities of the school. There are teacher made and standardize tests ,anecdotal records, rating scales, samples of pupils work, sociograms, diaries, and journals. The teacher should choose the technique suited to the individual pupil concerned and to the specific purpose foe which the evaluation is being made.8. Objective measurement and subjective judgment are both essential in evaluation. Records should be specific and as, far as possible objective. Subjective estimate are made objective by the inclusion of specific incidents and illustrations.9. Diagnosis and remedial work are phase of the evaluative process. Test results should be used for the improvement of instructions. Results should be carefully interpreted and necessary follow-up work should be done accordingly.10. Evaluation should be descriptive. Although the uses of terms like superior, good, average, and poor is better than the use of figures, these terms still leave much to be desired from the standpoint of evaluation. A descriptive concrete statementabout the child is more meaningful and significant to teachers, to parents, and to children than any blanket judgment that merely indicates that the child has passed.

Different Aspects of Growth to be Evaluated

For evaluation, techniques to be improved there must be agreement on what are tobe evaluated. The total development of the child should be first concern. The different major aspects of growth include (1) mental and physical health,(2) social adjustment, (3) purposes and activities, (4) intelligence and readiness, (5) quality of thinking , (6) integrative knowledge and skill,(7) interest in many fields of knowledge and endeavour, and (8) Individual aptitudes and creative art. All these should be included in the evaluation program.There is general agreement that a child should show satisfactory development in social, mental, and physical maturity commensurate with his

Chronological age. The child should grow in his ability to attack problems analytically and to think critically. The analysis of thought processes is difficult and complicated but teachers can watch for improvement in the children's ability (a) to select the significant from the trivial, (b) to connect ideas and draw conclusions, (c)to ask intelligent questions and (d) to do some critical thinking. The child should show increasing ability to use the work skills and increasing comprehension of material being studied, organizing it for use, and adapting it to his purpose. There should be evidence of the child's ability to get along with people-children and adult's alike- Under many and differing conditions. He should learn to cooperate with others and adapt himself to group situations. Examination of the activities children are engaged in as individuals and as a groups and the purpose s promoted through these activities will give a clear picture of the child as he develops socially, mentally , and physically.

Characteristics of an Evaluation Program

An evaluation program should be designed to cover as many important outcomes aspossible. This should include a variety of methods for securing and recording theevidence. Through observation during class discussions, individual committeereports, and supervised study, the teacher learns a great deal about each pupil. Test still provide the more concrete and detailed evidence. Test yieldevidence in a convenient form. This important thing, however, is to recognize thatthe tests should be used to supplement, rather than to supplant, the evidence collected through observation. Accordingly, an important aspect of teaching skill isability to devise suitable tests for specific outcomes and to integrate the use of tests into the sequence of learning activities. Both the learning activities and the appraisal procedures should be based onclearly defined outcomes. Learning situations should provide opportunities foruseful observation. Some situations should be specially designed to reveal understanding, critical thinking, and ability to apply what had been learned. Tests,though designed primarily as a means of evaluation may also be used to stimulate. Stated in more general terms, the procedures use to measure pupil progress are those required to obtain evidence of pupil progress toward educational objectives.

Evaluation Devices

There are various techniques in evaluating pupil growth as specified in our goals. The effectiveness of these techniques depends upon the skill of their user. Self-evaluation techniques. There are several ways by which children may be guided to do self-evaluation. They can be encouraged to keep diaries, preserve samples of their work, and keep records. They can compare recent achievements withy records of earlier achievements with records of earlier achievements. They may also rate themselves on an appropriate checklist at intervals of

time. Self-evaluation develops in the child self-control, self-direction, and wise judgment. Teaching Evaluation. Evaluation includes a variety of methods for securing and recording the evidence needed to provide information on pupil progress. The teacher who is completely aware of what he is looking for collects evidence from practically all learning activities. He continually collects information on the child'sprogress. To these, he utilize observational procedures, teacher – made tests, standardized achievements tests, and achievement test batteries.Observational procedures. The teacher, in his daily contacts with pupils, collects information as revealed in discussions and other situations. Such information is very valuable. However, there is the possibility that records may not be available when the teacher needs them and important behaviour may beoverlooked. Standard procedures have been adapted to guard against these possibilities. The most commonly used of these are anecdotal records, checklists ,and rating scales. Anecdotal records. Many teachers find it convenient to keep a pad on their table ready for note taking. This pad is designed for two kinds of entries: whathappened and what it probably means. Any interpretation of the meaning of behavior is tentative and subject to revision as more anecdotes are collected. EX. What happened: In a discussion of how carpenters use instruments to make linear measurements, Jose offered to bring his father's rule that is calibrated to tenths of an inch Interpretation: this indication of interest is encouraging because Jose had not been cooperative in the past

TOPIC 2: TECHNIQUES OF EVALUATION IN THEORY AND PRACTICE

Evaluation for education, learning and change – theory and practice. Evaluation is part and parcel of educating – yet it can be experienced as a burden and an unnecessary intrusion. We explore the theory and practice of evaluation and some of the key issues for informal and community educators, social pedagogues youth workers and others. In particular, we examine educators as connoisseurs and critics, and the way in which they can deepen their theory base and become researchers in practice.

introduction · on evaluation · three key dimensions · thinking about indicators · on being connoisseurs and critics · educators as action researchers · some issues when evaluating informal education · conclusion · further reading and references· acknowledgements · how to cite this article

A lot is written about evaluation in education – a great deal of which is misleading and confused. Many informal educators such as youth workers and social pedagogues are suspicious of evaluation because they see it as something that is imposed from outside. It is a thing that we are asked to do; or that people impose on us. As Gitlin and Smyth (1989) comment, from its Latin origin meaning 'to strengthen' or to empower, the term evaluation has taken a numerical turn – it is now largely about the measurement of things – and in the process can easily slip into becoming an end rather than a means. In this discussion of evaluation we will be focusing on how we can bring questions of value (rather than numerical worth) back into the centre of the process. Evaluation is part and parcel of educating. To be informal educators we are constantly called upon to make judgements, to make theory, and to discern whether what is happening is for the good. We have, in Elliot W. Eisner's words, to be connoisseurs and critics. In this piece we explore some important dimensions of this process; the theories involved; the significance of viewing ourselves as action researchers; and some issues and possibilities around evaluation in informal and community education, youth work and social pedagogy. However, first we need to spend a little bit of time on the notion of evaluation itself.

On evaluation

Much of the current interest in evaluation theory and practice can be directly linked to the expansion of government programmes (often described as the 'New Deal') during the 1930s in the United States and the implementation of various initiatives during the 1960s (such as Kennedy's 'War on Poverty') (see Shadish, Cork and Leviton 1991). From the 1960s-on 'evaluation' grew as an activity, a specialist field of employment with its own professional bodies, and as a body of theory. With large sums of state money flowing into new agencies (with projects and programmes often controlled or influenced by people previously excluded from such political power) officials and politicians looked to increased monitoring and review both to curb what they saw as 'abuses', and to increase the effectiveness and efficiency of their programmes. A less charitable reading would be that they were both increasingly concerned with micro-managing initiatives and in controlling the activities of new agencies and groups. Their efforts were aided in this by developments in social scientific research. Of special note here are the activities of Kurt Lewin and the interest in action research after the Second World War.

As a starter I want to offer an orienting definition:

Evaluation is the systematic exploration and judgement of working processes, experiences and outcomes. It pays special attention to aims, values, perceptions, needs and resources.

There are several things that need to be said about this.

First, evaluation entails gathering, ordering and making judgments about information in a methodical way. It is a research process.

Second, evaluation is something more than monitoring. Monitoring is largely about 'watching' or keeping track and may well involve things like performance indicators. Evaluation involves making careful judgements about the worth, significance and meaning of phenomenon.

Third, evaluation is very sophisticated. There is no simple way of making good judgements. It involves, for example, developing criteria or standards that are both meaningful and honour the work and those involved.

Fourth, evaluation operates at a number of levels. It is used to explore and judge practice and programmes and projects (see below).

Last, evaluation if it is to have any meaning must look at the people involved, the processes and any outcomes we can identify. Appreciating and getting of flavour of these involves dialogue. This makes the focus enquiry rather than measurement – although some measurement might be involved (Rowlands 1991). The result has to be an emphasis upon negotiation and consensus concerning the process of evaluation, and the conclusions reached.

Three key dimensions

Basically, evaluation is either about *proving* something is working or needed, or*improving* practice or a project (Rogers and Smith 2006). The first often arises out of our accountability to funders, managers and, crucially, the people are working with. The second is born of a wish to do what we do better. We look to evaluation as an aid to strengthen our practice, organization and programmes (Chelimsky 1997: 97-188).

To help make sense of the development of evaluation I want to explore three key dimensions or distinctions and some of the theory associated.

Programme or practice evaluation? First, it is helpful to make a distinction between programme and project evaluation, and practice evaluation. Much of the growth in evaluation has been driven by the former.

Programme and project evaluation. This form of evaluation is typically concerned with making judgements about the effectiveness, efficiency and sustainability of pieces of work. Here evaluation is essentially a management tool. Judgements are made in order to reward the agency or the workers, and/or to provide feedback so that future work can be improved or altered. The former may well be

related to some form of payment by results such as the giving of bonuses for 'successful' activities, the invoking of penalty clauses for those deemed not to have met the objectives set for it and to decisions about giving further funding. The latter is important and necessary for the development of work.

Practice evaluation. This form of evaluation is directed at the enhancement of work undertaken with particular individuals and groups, and to the development of participants (including the informal educator). It tends to be an integral part of the working process. In order to respond to a situation workers have to make sense of what is going on, and how they can best intervene (or not intervene). Similarly, other participants may also be encouraged or take it upon themselves to make judgements about the situation. In other words, they evaluate the situation and their part in it. Such evaluation is sometimes described as educative or pedagogical as it seeks to foster learning. But this is only part of the process. The learning involved is oriented to future or further action. It is also informed by certain values and commitments (informal educators need to have an appreciation of what might make for human flourishing and what is 'good'). For this reason we can say the approach is concerned with praxis – action that is informed and committed

These two forms of evaluation will tend to pull in different directions. Both are necessary – but just how they are experienced will depend on the next two dimensions.

TOPIC 2: APPROCHES TO EVALUATION : Summative or formative evaluation

Evaluations can be summative or formative. Evaluation can be primarily directed at one of two ends:

- To enable people and agencies make judgements about the work undertaken; to identify their knowledge, attitudes and skills, and to understand the changes that have occurred in these; and to increase their ability to assess their learning and performance (**formative evaluation**).
- To enable people and agencies to demonstrate that they have fulfilled the objectives of the programme or project, or to demonstrate they have achieved the standard required (**summative evaluation**).

Either can be applied to a programme or to the work of an individual. Our experience of evaluation is likely to be different according to the underlying purpose. If it is to provide feedback so that programmes or practice can be developed we are less likely, for example, to be defensive about our activities. Such evaluation isn't necessarily a comfortable exercise, and we may well experience it as punishing – especially if it is imposed on us (see below). Often a lot more is riding on a summative evaluation. It can mean the difference between having work and being unemployed!

Banking or dialogical evaluation? Last, it is necessary to explore the extent to which evaluation is dialogical. As we have already seen much evaluation is imposed or required by people external to the situation. The nature of the relationship between those requiring evaluation and those being evaluated is, thus of fundamental importance. Here we might useful employ two contrasting models. We can usefully contrast the dominant or traditional model that tend to see the people involved in a project as objects, with an alternative, dialogical approach that views all those involved as subjects. This division has many affinities to Freire's (1972) split between banking and dialogical models of education.

Exhibit 1: Rowlands on traditional (banking) and alternative (dialogical) evaluation

Joanna Rowlands has provided us with a useful summary of these approaches to evaluation. She was particularly concerned with the evaluation of social development projects.

The characteristics of the traditional (banking) approach to evaluation:

1. A search for objectivity and a 'scientific approach', through standardized procedures. The values used in this approach… often reflect the priorities of the evaluator.
2. An over-reliance on quantitative measures. Qualitative aspects…, being difficult to measure, tend to be ignored.
3. A high degree of managerial control, whereby managers can influence the questions being asked Other people, who may be affected by the findings of an evaluation, may have little input, either in shaping the questions to be asked or reflecting on the findings.
4. Outsiders are usually contracted to be evaluator in the belief that his will increase objectivity, and there may be a negative perception of them by those being evaluated'.

The characteristics of the alternative (dialogical) approach to evaluation

1. Evaluation is viewed as an integral part of the development or change process and involves 'reflection-action'. Subjectivity is recognized and appreciated.
2. There is a focus on dialogue, enquiry rather than measurement, and a tendency to use less formal methods like unstructured interviews and participant observation.
3. It is approached as an 'empowering process' rather than control by an external body. There is a recognition that different individuals and groups will have different perceptions. Negotiation and consensus is valued concerning the process of evaluation, and the conclusions reached, and recommendations made
4. The evaluator takes on the role of facilitator, rather than being an objective and neutral outsider. Such evaluation may well be undertaken by 'insiders' – people directly involved in the project or programme.

Adapted from Joanna Rowlands (1991) *How do we know it is working? The evaluation of social development projects*, and discussed in Rubin (1995: 17-23)

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We can see in these contrasting models important questions about power and control, the way in which those directly involved in programmes and projects are viewed. Dialogical evaluation places the responsibility for evaluation squarely on the educators and the other participants in the setting (Jeffs and Smith 2005: 85-92).

Thinking about indicators

The key part of evaluation, some may argue, is framing the questions we want to ask, and the information we want to collect such that the answers provide us with the*indicators* of change. Unfortunately, as we have seen, much of the talk and practice around indicators in evaluation has been linked to rather crude measures of performance and the need to justify funding (Rogers and Smith 2006). We want to explore the sort of indicators that might be more fitting to the work we do.

In common usage an indicator points to something, it is a sign or symptom. The difficulty facing us is working out just what we are seeing might be a sign of. In informal education – and any authentic education – the results of our labours may only become apparent some time later in the way that people live their lives. In addition, any changes in behaviour we see may be specific to the situation or relationship (see below). Further, it is often difficult to identify who or what was significant in bringing about change. Last, when we look at, or evaluate, the work, as E Lesley Sewell (1966) put it, we tend to see what we are looking for. For these reasons a lot of the outcomes that are claimed in evaluations and reports about work with particular groups or individuals have to be taken with a large pinch of salt.

Luckily, in trying to make sense of our work and the sorts of indicators that might be useful in evaluation, we can draw upon wisdom about practice, broader research findings, and our values.

Exhibit 2: Evaluation – what might we need indicators for?

We want to suggest four possible areas that we might want indicators for:
The number of people we are in contact with and working with. In general, as informal educators we should expect to make and maintain a lot of *contacts*. This is so people know about us, and the opportunities and support we can offer. We can also expect to involve smaller numbers of *participants* in groups and projects, and an even smaller number as *'clients'* in intensive work. The numbers we might expect – and the balance between them – will differ from project to project (Jeffs and Smith 2005: 116-121). However, through dialogue it does seem possible to come some agreement about these – and in the process we gain a useful tool for evaluation.
The nature of the opportunities we offer. We should expect to be asked questions about the nature and range of opportunities we offer. For example, do young people have a chance to talk freely and have fun; expand and enlarge their experience, and learn? As informal educators we should also expect to work with people to build varied programmes and groups and activities with different foci.
The quality of relationships available. Many of us talk about our work in terms of 'building relationships'. By this we often mean that we work both *through*relationship, and *for* relationship (see Smith and Smith forthcoming). This has come under attack from those advocating targeted and more outcome-oriented work. However, the little sustained research that has been done confirms that it is the relationships that informal educators and social pedagogues form with people, and encourage them to develop with others, that really matters (see Hirsch 2005). Unfortunately identifying sensible indicators of progress is not easy – and the job of evaluation becomes difficult as a result.
How well people work together and for others. Within many of the arenas where informal education flourishes there is a valuing of working so that people may organize things for themselves, and be of service to others. The respect in which this held is also backed up by research. We know, for example, that people involved in running groups generally grow in self-confidence and develop a range of skills (Elsdon 1995). We also know that those communities where a significant number of people are involved in organizing groups and activities are healthier, have more positive experiences of education, are more active economically, and have less crime (Putnam 1999). (Taken from Rogers and Smith 2006)

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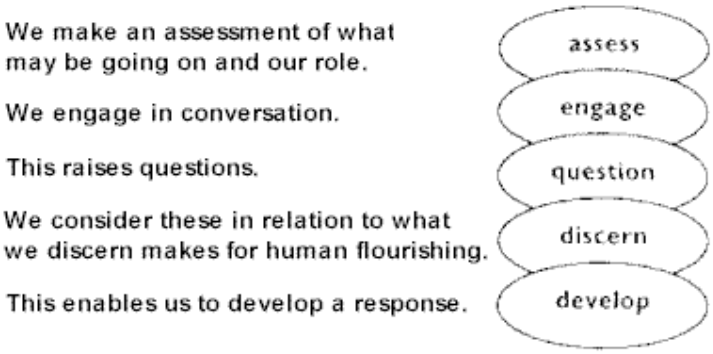
For some of these areas it is fairly easy to work out indicators. However, when it comes to things like relationships, as Lesley Sewell noted many years ago, 'Much of it is intangible and can be felt in atmosphere and spirit. Appraisal of this inevitably depends to some extent on the beholders themselves' (1966: 6). There are some outward signs – like the way people talk to each other. In the end though, informal education is fundamentally an act of faith. However, our faith can be sustained and strengthened by reflection and exploration.

On being connoisseurs and critics

Informal education involves more than gaining and exercising technical knowledge and skills. It depends on us also cultivating a kind of artistry. In this sense, educators are not engineers applying their skills to carry out a plan or drawing, they are artists who are able to improvise and devise new ways of looking at things. We have to work within a personal but shared idea of the 'good' – an appreciation of what might make for human flourishing and well-being (see **Jeffs and Smith** 1990). What is more, there is little that is routine or predictable in our work. As a result, central to what we do as educators is the ability to 'think on our feet'. Informal education is driven by conversation and by certain values and commitments (Jeffs and Smith 2005).



Describing informal education as an art does sound a bit pretentious. It may also appear twee. But there is a serious point here. When we listen to other educators, for example in team meetings, or have the chance to observe them in action, we inevitably form judgments about their ability. At one level, for example, we might be impressed by someone's knowledge of the income support system or of the effects of different drugs. However, such knowledge is useless if it cannot be used in the best way. We may be informed and be able to draw on a range of techniques, yet the thing that makes us special is the way in which we are able to combine these and improvise regarding the particular situation. It is this quality that we are describing as artistry.

For Donald Schön (1987: 13) artistry is an exercise of intelligence, a kind of knowing. Through engaging with our experiences we are able to develop maxims about, for example, group work or working with an individual. In other words, we learn to appreciate – to be aware and to understand – what we have experienced. We become what Eisner (1985; 1998) describes as 'connoisseurs'. This involves very different qualities to those required by dominant models of evaluation.

Connoisseurship is the art of appreciation. It can be displayed in any realm in which the character, import, or value of objects, situations, and performances is distributed and variable, including educational practice. (Eisner 1998: 63)

The word connoisseurship comes from the Latin *cognoscere*, to know (Eisner 1998: 6). It involves the ability to see, not merely to look. To do this we have to develop the ability to name and appreciate the different dimensions of situations and experiences, and the way they relate one to another. We have to be able to draw upon, and make use of, a wide array of information. We also have to be able to place our experiences and understandings in a wider context, and connect them with our values and commitments. Connoisseurship is something that needs to be worked at – but it is not a technical exercise. The bringing together of the different elements into a whole involves artistry.

However, educators need to become something more than connoisseurs. We need to become critics.

If connoisseurship is the art of appreciation, criticism is the art of disclosure. Criticism, as Dewey pointed out in *Art as Experience*, has at is end the re-education of perception… The task of the critic is to help us to see.

Thus… connoisseurship provides criticism with its subject matter. Connoisseurship is private, but criticism is public. Connoisseurs simply need to appreciate what they encounter. Critics, however, must render these qualities vivid by the artful use of critical disclosure. (Eisner 1985: 92-93)

Criticism can be approached as the process of enabling others to see the qualities of something. As Eisner (1998: 6) puts it, 'effective criticism functions as the midwife to perception. It helps it come into being, then later refines it and helps it to become more acute'. The significance of this for those who want to be educators is, thus, clear. Educators also need to develop the ability to work with others so that they may discover the truth in situations, experiences and phenomenon.

Educators as action researchers

Schön (1987) talks about professionals being 'researchers in the practice context'. As Bogdan and Biklen (1992: 223) put it, 'research is a frame of mind – a perspective people take towards objects and activities'. For them, and for us here, it is something that we can all undertake. It isn't confined to people with long and specialist training. It involves (Stringer 1999: 5):

• A problem to be investigated.
• A process of enquiry
• Explanations that enable people to understand the nature of the problem

Within the action research tradition there have been two basic orientations. The British tradition – especially that linked to education – tends to view action research as research oriented toward the enhancement of direct practice. For example, Carr and Kemmis provide a classic definition:

Action research is simply a form of self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of their own practices, their understanding of these practices, and the situations in which the practices are carried out (Carr and Kemmis 1986: 162).

The second tradition, perhaps more widely approached within the social welfare field – and most certainly the broader understanding in the USA – is of action research as 'the systematic collection of information that is designed to bring about social change' (Bogdan and Biklen 1992: 223). Bogdan and Biklen continue by saying that its practitioners marshal evidence or data to expose unjust practices or environmental dangers and recommend actions for change. It has been linked into traditions of citizen's action and community organizing, but in more recent years has been adopted by workers in very different fields.

In many respects, this distinction mirrors one we have already been using – between programme evaluation and practice evaluation. In the latter, we may well set out to explore a particular piece of work. We may think of it as a case study – a detailed examination of one setting, or a single subject, a single depository of documents, or one particular event (Merriam 1988). We can explore what we did as educators: what were our aims and concerns; how did we act; what were we thinking and feeling and so on? We can look at what may have been going on for other participants; the conversations and interactions that took place; and what people may have learnt and how this may have affected their behaviour. Through doing this we can develop our abilities as connoisseurs and critics. We can enhance what we are able to take into future encounters.

When evaluating a programme or project we may ask other participants to join with us to explore and judge the processes they have been involved in (especially if we are concerned with a more dialogical approach to evaluation). Our concern is to collect information, to reflect upon it, and to make some judgements as to the worth of the project or programme, and how it may be improved. This takes us into the realm of what a number of writers have called community-based action research. We have set out one example of this below.

Exhibit 3: Stringer on community-based action research

A fundamental premise of community-based action research is that it commences with an interest in the problems of a group, a community, or an organization. Its purpose is to assist people in extending their understanding of their situation and thus resolving problems that confront them….

Community-based action research is always enacted through an explicit set of social values. In modern, democratic social contexts, it is seen as a process of inquiry that has the following characteristics:

- It is *democratic*, enabling the participation of all people.
- It is *equitable*, acknowledging people's equality of worth.
- It is *liberating*, providing freedom from oppressive, debilitating conditions.
- It is *life enhancing*, enabling the expression of people's full human potential. (Stringer 1999: 9-10)

The action research process
Action research works through three basic phases:
Look - building a picture and gathering information. When evaluating we define and describe the problem to be investigated and the context in which it is set. We also describe what all the participants (educators, group members, managers etc.) have been doing.
Think – interpreting and explaining. When evaluating we analyse and interpret the situation. We reflect on what participants have been doing. We look at areas of success and any deficiencies, issues or problems.
Act – resolving issues and problems. In evaluation we judge the worth, effectiveness, appropriateness, and outcomes of those activities. We act to formulate solutions to any problems.
(Stringer 1999: 18; 43-44;160)
We could contrast with a more traditional, banking, style of research in which an outsider (or just the educators working on their own) collect information, organize it, and come to some conclusions as to the success or otherwise of the work.

Some issues when evaluating informal education
In recent years informal educators have been put under great pressure to provide 'output indicators', 'qualitative criteria', 'objective success measures' and 'adequate assessment criteria'. Those working with young people have been encouraged to show how young people have developed 'personally and socially through participation'. We face a number of problems when asked to approach our work in such ways. As we have already seen, our way of working as informal educators places us within a more dialogical framework. Evaluating our work in a more bureaucratic and less inclusive fashion may well compromise or cut across our work.
There are also some basic practical problems. Here we explore four particular issues identified by Jeffs and Smith (2005) with respect to programme or project evaluations.
The problem of multiple influences. The different things that influence the way people behave can't be easily broken down. For example, an informal educator working with a project to reduce teen crime on two estates might notice that the one with a youth club open every weekday evening has less crime than the estate without such provision. But what will this variation, if it even exists, prove? It could be explained, as research has shown, by differences in the ethos of local schools, policing practices, housing, unemployment rates, and the willingness of people to report offences.
The problem of indirect impact. Those who may have been affected by the work of informal educators are often not easily identified. It may be possible to list those who have been worked with directly over a period of time. However, much contact is sporadic and may even take the form of a single encounter. The indirect impact is just about impossible to quantify. Our efforts may result in significant changes in the lives of people we do not work with. This can happen as those we work with directly develop. Consider, for example, how we reflect on conversations that others recount to us, or ideas that we acquire second- or third-hand. Good informal education aims to achieve a ripple effect. We hope to encourage learning through conversation and example and can only have a limited idea of what the true impact might be.
The problem of evidence. Change can rarely be monitored even on an individual basis. For example, informal educators who focus on alcohol abuse within a particular group can face an insurmountable problem if challenged to provide evidence of success. They will not be able to measure use levels

prior to intervention, during contact or subsequent to the completion of their work. In the end all the educator will be able to offer, at best, is vague evidence relating to contact or anecdotal material.

The problem of timescale. Change of the sort with which informal educators are concerned does not happen overnight. Changes in values, and the ways that people come to appreciate themselves and others, are notoriously hard to identify – especially as they are happening. What may seem ordinary at the time can, with hindsight, be recognized as special.

Workarounds

There are two classic routes around such practical problems. We can use both as informal educators.

The first is to undertake the sort of participatory action research we have been discussing here. When setting up and running programmes and projects we can build in participatory research and evaluation from the start. We make it part of our way of working. Participants are routinely invited and involved in evaluation. We encourage them to think about the processes they have been participating in, the way in which they have changed and so on. This can be done in ways that fit in with the general run of things that we do as informal educators.

The second route is to make linkages between our own activities as informal educators and the general research literature. An example here is group or club membership. We may find it very hard to identify the concrete benefits for individuals from being member of a particular group such as a football team or social club. What we can do, however, is to look to the general research on such matters. We know, for example, that involvement in such groups builds social capital. We have evidence that:

In those countries where the state invested most in cultural and sporting facilities young people responded by investing more of their own time in such activities (Gauthier and Furstenberg 2001).

The more involved people are in structured leisure activities, good social contacts with friends, and participation in the arts, cultural activities and sport, the more likely they are to do well educationally, and the less likely they are to be involved even in low-level delinquency (Larson and Verma 1999).

There appears to be a strong relationship between the possession of social capitaland better health. 'As a rough rule of thumb, if you belong to no groups but decide to join one, you cut your risk of dying over the next year *in half*. If you smoke and belong to no groups, it's a toss-up statistically whether you should stop smoking or start joining' (ibid.: 331). Regular club attendance, volunteering, entertaining, or church attendance is the happiness equivalent of getting a college degree or more than doubling your income. Civic connections rival marriage and affluence as predictors of life happiness (Putnam 2000: 333).

This approach can work where there is some freedom in the way that you can respond to funders and others with regard to evaluation. Where you are forced to fill in forms that require the answers to certain set questions we can still use the evaluations that we have undertaken in a participatory manner – and there may even be room to bring in some references to the broader literature. The key here is to remember that we are educators – and that we have a responsibility foster learning, not only among those we work with in a project or programme, but also among funders, managers and policymakers. We need to view their requests for information as opportunities to work at deepening their appreciation and understanding of informal education and the issues and questions with which we work.

IMPORTANCE OF EVALUATION IN EDUCATION

Evaluation is not just a testing programme or an administrative technique. It is not something to be resorted to at the close of the school term as a culminating activity, nor should it be viewed as an end

activity to be done by the district and division supervisors of the Bureaus of Public and Private Schools.

In the modern school, increasing emphasis on the personal and social development of the child, as well as his academic achievement, has called for the corresponding development of a variety of techniques fur appraising all phases of child growth and development, of pupil achievement, of behaviour and of the teaching-learning processes.

Due to the large number of factors that enter into teaching and learning including such instructional variables as objectives, methods and techniques, and subject-matter on the one hand; and such human variables as pupils, teachers, and supervisors on the other, it has been difficult to appraise the validity of the pupil's achievement.

There is, therefore, a comparatively large subjective factor in the evaluation of teaching and learning that needs to be taken into account together with its objective features.

It cannot be denied that the evaluation of teaching and learning is an exceedingly complex activity. However, the efficiency of the teacher and the growth and achievement of the pupil can be evaluated through the use of such devices as check lists, rating scales, and tests of different aspects of teaching ability, interview, and questionnaires.

Through the use of such devices much valuable data may be gathered relative to many of the important aspects of teaching and learning.

The importance of evaluation in teaching can be summarized as follows:

1. Evaluation is Important to the Class-room Teachers, Supervisors, and Administrators in Directing as well as Guiding Teaching and Learning

Evaluation, to be of importance to teachers and supervisors, should be diagnostic, i.e., it should reveal the specific points of strength and weakness in teaching and learning.

2. Evaluation also helps to Measure the Validity and Reliability of Instruction

The effectiveness and success of any phase of teaching technique can be demonstrated through the nature of the results obtained.

From a purely methodical point of view, the measurement of effective teaching finds its great value in the possibilities it offers for the improvement of teaching and learning.

All activities of the teacher should be evaluated in the light of their adequacy to promote the democratic way of life and on how nearly do the students realize the objectives of education.

3. Evaluation Aids in Devising more Effective Instructional Materials and Procedures of Instruction

Current educational literature is filled with enthusiastic advocacy of various cooperative researches, and if worked along this line, will determine the degree of success and effectiveness of evaluation.

4. Evaluation Helps Teachers to Discover the Needs of the Pupils

The purpose of any program of evaluation is to discover the needs of the pupils being evaluated and then to design learning experiences that will satisfy these needs.

Traditionally, the results of evaluation have been used to compare one individual with another. It is an accepted fact that growth is a continuous process and that each individual grows at a rate that is unique for him.

5. Evaluation Stimulates Students to Study

A questioning teacher creates incentives for students to learn more. He sets up effective and definite goals for learning giving oral or written examination is a good incentive for the students to study harder or to do better work.

It makes the learner familiar with his own results. Likewise, he needs to understand his own high and low potential for learning, but even more, he needs help in understanding the personal problems of human relations.

6. Evaluation Helps Parents to Understand Pupil-Growth, Interests, and Potentialities

The major responsibility of the school and teacher is to help the parents understand their children. Understanding a youth means understanding his progress in the various areas of the curriculum, his

desires and motives and behavior they lead to, his potentialities for learning, as well as his achievement.

7. Evaluation can be used to Enforce External Standards upon the Individual Class or School

This method should be such as to encourage a flexible curriculum which is ever responsive to the changing needs of modern life and to the variations in local conditions. Local schools should be free to select and develop instruments for evaluation which are appropriate for their curricula

8. Evaluation, Likewise, Helps to Provide Objective Evidences for Effective Cooperation between Parents and Teachers

The increasing complexity of our present society has emphasized the importance of the cooperation of the school, the home, and the community in making significant educational progress

9. Evaluation is Helpful in Securing Support for the School from the Government, Local or National

The people frequently complain that public schools in this country are inadequately supported.

10. Evaluation is Helpful to the Teacher

It enables him to see how he can make his contribution to the accomplishment of the total goals or aims of the school system. It helps the teacher to coordinate his efforts with the efforts of others who contribute to the general educational goals.

Types of tests useful in teaching

Modern tests are so numerous that it is extremely difficult to classify them closely. Tests can be classified on the basis of their ' forms, their functions, and their content. The types given by the writer are classified as: function, educational intelligence, and personality tests.

1. Educational Tests

Educational tests have as their primary function the measurement of the results or effects of instruction and learning. They are intended to test primarily class-room learning. Educational test may be either standardized or non-standardized.

A non-standardized test has no fixed norm and it is free from prescribed rules. The teacher-made test is a good example of the non-standardized test. Examples of educational tests are the following:

(b) Standard Survey Test, which .aims to measure the attainment, progress or status of the pupils or the schools. It refers also to a test which measures the general achievement of the pupils in a certain subject or field.

(c) Informal or Teacher-made Test, which aims to measure the achievement, progress, weakness or defects of the individual pupils or class, or the effectiveness of the method used by the teacher. This may be either an essay or an informal objective test.

(d) Standard Achievement Test, which aims to measure the pupil's accomplishment as a result of instruction in a given subject or subjects.

(e) Standard Diagnostic Test, which aims to locate the weaknesses, and if possible, the cause of disability in performance.

(f) Aptitude Test, which aims to measure the specific intelligence as it operates in a certain field or area of performance. It may be used for prognostic purposes.

(g) Inventory Test, which aims to measure the degree of mastery existing before the teaching or the learning of the subject or subjects.

2. Intelligence Tests

The intelligence tests have as their purpose the measurement of the pupil's intelligence or mental ability in a large degree without reference to what the pupil learned in or out of school. The two types of Intelligence Tests are:

***(a)* Individual Intelligence Test**

This type of intelligence test can be administered only to one pupil at a time, like the Binet and Simon Intelligence Test (1904).

***(b)* Group Intelligence Test**

This type of Intelligence test can be administered to a number of pupils at the same time, like the Alpha and Beta Intelligence Tests, or the Philippine Mental Tests.

Values of the Educational Test

Some values of the educational test worth considering are as follows:

1. The Educational Test Measures the Accomplishment and Progress of the Pupils

Any attempt to measure the achievement of the children would result in the discovery of the progress being made from week to week, or from month to month or from year to year.

It would be advantageous to note the progress and deficiency at all periods if comparison is to be made with the work three weeks or a month later. Some tests are designed to serve this end these results of achievement tests are widely used for classification and promotion.

2. An Educational Test Diagnoses the Strength and Weakness of the Pupils in a Subject or Subjects

The test will serve both as a guide to teaching and as an enlightenment to the learner. When a pupil makes an error, the teacher needs to apply a diagnostic test to discover why the pupil made the error and to determine how the thinking of the pupil may be directed in order to build up a correct reaction in place of the incorrect one.

Asking questions, the use of drill material, and the review are all forms of diagnostic tests. It is, therefore, a sound educational practice to use both oral and written tests for diagnosing what goes on in the pupil's mind.

3. The Educational Test Stimulates the Pupils to Study

Testing serves as a stimulus to daily preparation. The teacher, by giving an unannounced or announced test of some sort will, no doubt, stimulate the pupils to study the lesson assigned or the work covered. Giving a written examination is a good incentive for the pupils to study harder or to do better work. It makes the learner familiar with his own results.

The final Examination given in the high school and in college at the end of the course or term furnishes a very powerful stimulus to review.

4. The Educational Test Measures the Validity and Reliability of Instruction

The effectiveness and success of any phase of teaching technique can be demonstrated through the character of the results obtained.

The teacher should know how to measure the results of his work in order to adapt his procedure to the needs of the varying situations from a purely methodical point of view the measurement of teaching effectiveness finds its greatest value in the possibilities if offers for the improvement of teaching.

5. The Educational Test Sets-up Standards of Performance for the Pupils

It increases the effectiveness of education by setting up standards of achievement in terms of varying capacities. A standard test can be used in comparing the merits of different schools, different class-room methods, different organisations of materials, and the different lengths and methods of assignment

6. The Educational Test opens the way to Remedial Work

Test results afford a basis for diagnosing the pupil's needs. Difficulties are prevented by the early discovery of the strength and weakness of the pupil. Knowing the defect of the individual or the general weakness "of the class, the teacher will be able to select the right course or procedure to follow

7. The Educational Test can be Used for Educational and Vocational Guidance

Test results afford a basis for the guidance of pupils. The test first came into use in a general way. It can be used to guide the pupil in school in the selection of courses or of the vocation for which he is best qualified. It can be used to discover the unusual aptitude of pupils.

The guidance function of education assumes a prominent place in the modern concepts of the aims of education. It is generally accepted that intelligence tests are necessary to supplement indices of achievement as a basis for guidance.

The use of intelligence tests for guidance purposes has become so thoroughly accepted that no guidance can be considered effective which does not involve the use of these means.

8. Educational Test Results are a Valuable Part of the Pupil's Records

The meaning of the test data is widely understood, and when they are entered in the pupil's permanent record they can help other teachers understand him better. The test data should be used only as background information, not as a measure of present status.

9. Educational Tests can be used in the Classification and Sectioning of Pupils

It has been proved that pupils learn most effectively when they are placed with other pupils having approximately the same abilities.

This means that pupils of approximately the same intelligence and achievement levels should be grouped together for instructional purposes. For the accomplishment of this purpose intelligence and achievement tests can be utilized.

10. The Educational Test can be used by Supervisors to Direct and Guide the Teachers

The supervisor who appreciates the value and limitations of tests can use the data to suggest changes and improvement in teaching procedures. However, tests should not be used as the sole criterion for evaluating teacher-effectiveness.

The training of the teacher, the ability of the class, the materials and resources available to the teacher, are other factors that should be taken into consideration. The test data should be used as supplementary evidence.

TOPIC 3: COMPREHENSIVE AND COUNTINIOUS EVALUATION

Continuous and comprehensive evaluation is an education system newly introduced by Central Board of Secondary Education in India, for students of sixth to tenth grades. The main aim of CCE is to evaluate every aspect of the child during their presence at the school. This is believed to help reduce the pressure on the child during/before examinations as the student will have to sit for multiple tests throughout the year, of which no test or the syllabus covered will be repeated at the end of the year, whatsoever. The CCE method is claimed to bring enormous changes from the traditional *chalk and talk* method of teaching, provided it is implemented accurately.

New scheme of evaluation

As a part of this new system, student's marks will be replaced by grades which will be evaluated through a series of curricular and extra-curricular evaluations along with academics. The aim is to reduce the workload on students and to improve the overall skill and ability of the student by means of evaluation of other activities. Grades are awarded to students based on work experience skills, dexterity, innovation, steadiness, teamwork, public speaking, behavior, etc. to evaluate and present an overall measure of the student's ability. This helps the students who are not good in academics to show their talent in other fields such as arts, humanities, sports, music, athletics, etc.

Marks and grades

In CCE, the marks obtained in an exam are usually not revealed. However, equivalent grades, which would be deduced using a special method by the teachers during evaluation would be revealed. This is considered as a drawback since a child with 92 marks will get the same grade as the child with 100 marks and their talents cannot be recognized by anyone else other than their teachers. Though this system might have some drawbacks it instills this value that students need to compete with themselves to get a better grade and not with others. The grading system is as follows-

Unlike CBSE's old pattern of only one test at the end of the academic year, the CCE conducts several. There are two different types of tests. Namely, the *formative* and the *summative*. Formative tests will comprise the student's work at class and home, the student's performance in oral tests and quizzes and the quality of the projects or assignments submitted by the child. Formative tests will be conducted four times in an academic sesssion, and they will carry a 40% weightage for the aggregate. In some schools, an additional written test is conducted instead of multiple oral tests. However, at-least one oral test is conducted.

The summative asssesssment is a three-hour long written test conducted twice an year. The first summative or *Summative Assessment 1* (SA-1) will be conducted after the first two formatives are completed. The second (SA-2) will be conducted after the next two formatives. Each summative will carry a 30% weightage and both together will carry a 60% weightage for the aggregate. The summative assessment will be conducted by the schools itself. However, the question papers will be partially prepared by the CBSE and evaluation of the answer sheets is also strictly monitored by the CBSE. Once completed, the syllabus of one summative *will not* be repeated in the next. A student will have to concentrate on totally new topics for the next summative.

At the end of the year, the CBSE processes the result by adding the formative score to the summative score, i.e. 40% + 60% = 100%. Depending upon the percentage obtained, the board will deduce the CGPA and thereby deduce the grade obtained. In addition to the summative assessment, the board will offer an optional online aptitude test that may also be used as a tool along with the grades obtained in the CCE to help students to decide the choice of subjects in further studies. The board has also instructed the schools to prepare the report card and it will be duly signed by the principal, the student and the Board official.

Often during the evaluation of Social Science papers, the following concepts are observed.

- Investigation of the situation - What is the question and what is to be explained.
- Deductive Method - What does the student know and how can he use it to explain a situation.
- Co-relation with a real life situation - Whether the situation given matches any real life situation, like tsunamis, floods, tropical cyclones, etc.
- Usage of Information Technology - Can the problem be solved with the use of IT? If yes, how?

In addition to that, various assignments can be given such as projects, models and charts, group work, worksheet, survey, seminar, etc. The teacher will also play a major role. For example, they give remedial help, maintain a term-wise record and checklists, etc.

TOPIC 4 : TOOLS OF EVALUATION

The most commonly used techniques are observation ,interview, case study, sociometry and projective techniques like cat ,picture completion etc.
The main tools are achievement tests, anecdotal record, cumulative record ,rating scale, check list and questionnaires.

I. ACHIEVEMENT TEST

An **achievement test** is a test of developed skill or knowledge. The most common type of achievement test is a standardized test developed to measure skills and knowledge learned in a given grade level, usually through planned instruction, such as training or classroom instruction. Achievement tests are often contrasted with tests that measure aptitude, a more general and stable cognitive trait.

Achievement test scores are often used in an educational system to determine what level of instruction for which a student is prepared. High achievement scores usually indicate a mastery of grade-level material, and the readiness for advanced instruction. Low achievement scores can indicate the need for remediation or repeating a course grade.

Under No Child Left Behind, achievement tests have taken on an additional role of assessing proficiency of students. Proficiency is defined as the amount of grade-appropriate knowledge and skills a student has acquired up to the point of testing. Better teaching practices are expected to increase the amount learned in a school year, and therefore to increase achievement scores, and yield more "proficient" students than before.

When writing achievement test items, writers usually begin with a list of content standards (either written by content specialists or based on state-created content standards) which specify exactly what students are expected to learn in a given school year. The goal of item writers is to create test items that measure the most important skills and knowledge attained in a given grade-level. The number and type of test items written is determined by the grade-level content standards. Content validity is determined by the representativeness of the items included on the final test.

II. INTERVIEW

Interviews

Interviews can provide even more opportunity for respondents to raise their own issues and concerns, but are correspondingly more time-consuming and can raise difficulties in the collation and interpretation of information. The format can be on a spectrum from completely open discussion to tightly structured questions. Semi-structured interviews have a small schedule of questions to point the interviewee towards an area of interest to the researcher, but then allow interviewees to raise any items they like within the general topic area. Since interviews give an opportunity for students to raise their own agenda they are useful when issues are open, or at an exploratory stage. A small number of interviews can be useful to define issues for subsequent more tightly structured questionnaires.

Interviews are normally tape recorded. If analysis, rather than just impression is required, then transcripts have to be produced. The transcripts are normally analysed by searching for responses or themes which commonly occur. Quotations from the transcripts can be used to illuminate or illustrate findings reported in reports and papers.

There are computer programmes available to assist with the analysis of qualitative data. One example is the programme NUDIST which has facilities for indexing, text-searching, using Boolean operations on defined index nodes, and combining data from several initially independent studies

III. OBSERVATION METHOD

Techniques of observation

Typically the description section of your field report is describing some situation, person, event or place from the field. Although we all have played the observer at some point in our daily lives, when observing as a researcher some other issues need to be considered.

How to record your observations:

- **Notes**
  Notes are obviously the most commonly used and easiest method of recording your observations. Some tips for using notes include organising some shorthand symbols

beforehand so that recording your observations does not impede your ability to observe. Also, it is good to have a wide margin on your paper where you can write down things like your self observations, theoretical insights and notes to yourself for further investigation (Kellehear, 1993; May, 1997).

- **Video recorder or tape recorder**
  Videoing or tape recording your observations has the positive effect of allowing you to re-analyse your observations but these methods have the negative effect of increasing how intrusive you are as an observer and will often not be practical or even allowed in places such as a court room.
- **Checklist of behaviours or physical characteristics.**

Things to look for when observing (Kellehear, 1993: 116, 130):

- **Physical location:** its characteristics and the human use of the physical location.
- **Language and behaviour**.
- **Behaviour cycles:** documenting when and who performs what behaviour or task and how often they occur. At which stage is this behaviour occurring within the setting i.e. at lunch time or individual work time in a school, within the formal or informal proceedings of a court case?
- **The order and the setting** in which events unfold.
- **Exterior physical signs** such as age, sex, clothing.
- **Expressive body movements** such as body posture or frowning/smiling. It may be relevant to your observation to see if these support or contradict the verbal.

Brief notes about all these areas contextualise your observations (Kellehear, 1993); however, the main focus of your observational notes will be guided by your theoretical interests, although your observations will feed into, modify and alter these (May, 1997).

Observation sampling styles (Kellehear, 1993: 130):
Depending on your task, it will often be impractical to observe and record everything. If this is the case, you will need to make a decision about what type of sample of the event or situation to record. There are several ways to sample when making observations.

- Non systematic ad libitum sampling is where the observer records whatever is of interest.
- Focal sampling involves recording all the behaviours and physical features over a designated period of time.
- Scan sampling involves rapidly sampling a set physical location or group at regular intervals and recording observations on many aspects.
- Behaviour sampling involves choosing a behaviour and noting who does it and when it is displayed.

These latter types of sampling will be more appropriate to field studies in disciplines such as education or psychology where you might be in a school yard or classroom observing a child or groups of children.

IV. SELF REPORTING TECHNIQUES

Self Report Methods

- **Questionnaires**

A questionnaire is a set of written questions which are usually highly structured. The researcher will normally assemble a number of questions which are then posed to a representative sample of the relevant population. The questionnaire can either be highly structured, with fixed alternative responses which can then be collated and analysed, or more open-ended, with the respondents able to express themselves in their own words.

There are four main ways of administering questionnaires: **face-to-face** interviewing, which is useful but expensive in terms of employing and training interviewers; **handout questionnaires**, when there is a readily available and clearly defined population who are all located in one place at a given time: **postal questionnaires**; and **telephone questionnaires**.

Response rates to questionnaires vary with the type of sample and with the population concerned. A population which is highly motivated and interested in a topic will obviously produce a higher response rate than one which lacks interest. The technique used to administer the questionnaire will also produce variation in response rate, with responses to postal questionnaires being the lowest and responses to telephone questionnaires being the highest. There are also some factors which have been shown to increase response rates, such as using follow-up queries, providing incentives to respondents (such as a prize draw or free ball-point pen) and, most importantly of all, increasing the ease of reply. As a general rule, the harder a questionnaire is to answer, the lower the response rate will be.

- **Strengths**

1. Surveys are able to study large samples of people fairly easy.
2. Surveys are able to examine a large number of variables.
3. Survey research can ask people to reveal behaviour and feelings which have been experienced in real situations.
4. If samples of people are selected at random and are large enough it should be possible to generalise the results to a larger population.
5. Questionnaire surveys can be carried out relatively cheaply.

- **Weaknesses**

1. People may not respond truthfully, either because they cannot remember or because they wish to present themselves in a socially acceptable manner.
2. We can not establish cause and effect relationships from survey data as other variables which could have had an effect may not have been considered in the questionnaire or interview.
3. It may be difficult to obtain a random sample of the population because some people who are selected refuse to answer questions or it may be difficult to obtain a full list of the population from which to select a random sample.
4. Whether the method is open-ended or highly structured, there can be difficulties. In the case of the highly structured questionnaire, the structure will probably reflect the preconceptions of the compiler, and may force respondents to answer in a way which does not entirely accord with their views. A more open-ended survey, on the other hand, may lead to much more subjectivity when it comes to its interpretation. Of course surveys deal with people's verbal

responses to questions posed verbally, as well as with behaviour. There is no way you can be certain that what people say they do accords with what they actually do.

Psychometrics

Psychometric tests are instruments which have been developed for measuring mental characteristics. Psychological tests have been developed to measure a wide range of things, including creativity, job attitudes and skills, brain damage and, of course, 'intelligence'. Psychometric means, literally, measuring the mind and, in one sense, any systematic attempt to assess mental characteristics could come into this category. The term, however is usually used to describe specific tests for personality, aptitude, intelligence or some kind of attitude measurement.

Strengths

1. This technique, of course, provides lots of quantitative data which is easy to analyse statistically.
2. Psychometric tests are usually easy to administer.

Weaknesses

1. Constructing valid and reliable tests is very difficult.
2. Tests usually contain culture bias, especially intelligence tests.
3. Most tests will contain designer bias, in the sense that any test is biased in the direction of the author's view.
4. Most tests make the assumption that characteristics to be measured are fixed and invariant, both in relation to time and also in relation to circumstance or situation. Many studies in psychology, especially social psychology, demonstrate that this is not so.

Interviews

There are many different ways to conduct an interview, ranging from casual chats to formal, standardised, set questions which have to be asked in a particular way. Clinical interviews are lengthy interviews aimed at a detailed understanding of a person's mental processes. There are no set questions; the questions depend on the last answers given.

Strengths:

1. Interviews conducted in a casual manner provide information that is more spontaneous and realistic than those obtained in a formal interview.
2. If we use standardised interviews it is easier to generalise (as long as the sample is large enough).
3. Clinical interviews provide insight into the thoughts of individual children or adults which a standardised format would not allow.

Limitations:

1. Sampling of subjects is a problem (see section on sampling for more

detail).

2. Informal interviews do not allow generalisation. One person may talk about something so differently from the way that another person does that it becomes almost impossible to compare what two people said. This applies to some extent to clinical interviews.

3. In formal interviews, if people feel that they are being asked a set of routine and automatic questions from a list they often do not talk as freely as they would in a casual conversation. The interviewer needs to be thoroughly skilled and trained to make it seem a natural and not an awkward situation. This means that a formal interview study is quite difficult (and expensive) to conduct well.

4. A major problem with interviews is demand characteristics. This includes interviewer biases and response biases. An interviewer may influence the respondent through, for example, leading questions or subtle reinforcements of 'right' or 'wrong' answers. Response bias may happen when, for example, respondents give socially acceptable answers.

TOPIC 5 : CHARACTRISTIC OF A GOOD TOOL

1. ***Objective-basedness:*** Evaluation is making judegement about some phenomena or performance on the basis of some pre-determined objectives. Therefore a tool meant for evaluation should measure attainment in terms of criteria determined by instructional objectives. This is possible only if the evaluator is definite about the objectives, the degree of realization of which he is going to evaluate. Therefore each item of the tool should represent an objective.
2. ***Comprehensiveness:*** A tool should cover all pints expected to be learnt by the pupils. It should also cover all the pre-determined objectives. This is referred to be comprehensiveness.
3. ***Discriminating power:*** A good evaluation tool should be able to discriminate the respondents on the basis of the phenomena measured. Hence while constructing a tool for evaluation, the discrimination power has to be taken care of. This may be at two levels- first for the test as a whole and then for each item included.
4. ***Reliability:*** Reliability of a tool refers to the degree of consistency and accuracy with which it measures what it is intended to measure. If the evaluation gives more or less the same result every time it is used, such evaluation is said to be reliable. Consistency of a tool can be improved by limiting subjectivity of all kinds. Making items on the basis of pre-determined specific objectives, ensuring that the expected answers are definite and objective, providing clearly spelt-out scheme for scoring and conducting evaluation under identical and ideal condition will help in enhancing reliability. Test-retest method, split-half method and equivalent form or parallel form method are the important methods generally used to determine the reliability of a tool.
5. ***Validity:*** Validity is the most important quality needed for an evaluation tool. If the tool is able to measure what it is intended to measure, it can be said that the tool is valid. It should fulfill the objectives for which it is developed. Validity can be defined as " the accuracy with which it measures what it is intended to measure or as the degree in which it approaches infallibility in measuring what it purports to measure Content validity, predictive validity, construct validity, concurrent validity, congruent validity, factorial validity, criterion-related validity, etc. are some of the important types of validity which is needs to fulfill by a tool for evaluation.
6. ***Objectivity:*** A tool is said to be objective if it is free from personal bias of interpreting its scope as well as in scoring the responses. Objectivity is one of the most primary pre-requisites required for maintaining all other qualities of a good too.
7. ***Practicability:*** A tool, however, well it satisfies all the above criteria, may be useless unless it is not practically feasible. For example, suppose, in order to ensure comprehensiveness, it was felt that thousand items should be given to be answered in ten hours. This may yield valid result, but from practical point of view it s quite impossible.

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SUBMITTED BY

NEHA PRASAD
ASSIT. PROF.
FIMT, SCHOOL OF EDUCATION