CURRICULUM AND INSTRUCTION

Course Code 8655

Department of Secondary Teacher Education
ALLAMA IQBAL OPEN UNIVERSITY ISLAMABAD
CURRICULUM AND INSTRUCTION

B.Ed. (4 Years)

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### COURSE DEVELOPMENT TEAM

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
</tr>
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<tbody>
<tr>
<td>Chairman Course Team:</td>
<td>Dr. M. Zafar Iqbal</td>
</tr>
<tr>
<td>Course Development Coordinator:</td>
<td>S.M. Shahid</td>
</tr>
<tr>
<td>Author:</td>
<td>S.M. Shahid</td>
</tr>
<tr>
<td>Reviewer:</td>
<td>Dr. M. Zafar Iqbal</td>
</tr>
<tr>
<td>Editor:</td>
<td>Sayed Muhammad Ali</td>
</tr>
<tr>
<td>Composed by:</td>
<td>Malik Mateen Ishfaq</td>
</tr>
</tbody>
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### COURSE REVISION TEAM

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
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<tbody>
<tr>
<td>Chairperson</td>
<td>Dr. Naveed Sultana</td>
</tr>
<tr>
<td></td>
<td>Chairperson,</td>
</tr>
<tr>
<td></td>
<td>Department of Secondary Teacher Education</td>
</tr>
<tr>
<td>Course Revision Coordinator:</td>
<td>Dr. Sidra Rizwan</td>
</tr>
<tr>
<td>Reviewers</td>
<td>Dr. Sidra Rizwan</td>
</tr>
<tr>
<td></td>
<td>Ms. Tooba Saleem</td>
</tr>
<tr>
<td>Editor</td>
<td>Mr. Fazal Karim</td>
</tr>
<tr>
<td>Course Coordinator</td>
<td>Dr. Sidra Rizwan</td>
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</table>
# CONTENTS

<table>
<thead>
<tr>
<th>Topics</th>
<th>Page No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td>v</td>
</tr>
<tr>
<td>Course Objectives</td>
<td>viii</td>
</tr>
<tr>
<td>Unit -1: Theory of Curriculum</td>
<td>1</td>
</tr>
<tr>
<td>Unit -2: Curriculum Planning and Development</td>
<td>23</td>
</tr>
<tr>
<td>Unit -3: Curriculum Designs</td>
<td>47</td>
</tr>
<tr>
<td>Unit -4: Curriculum Evaluation</td>
<td>69</td>
</tr>
<tr>
<td>Unit -5: Teaching and Instruction</td>
<td>103</td>
</tr>
<tr>
<td>Unit -6: Models of Teaching in Instruction</td>
<td>127</td>
</tr>
<tr>
<td>Unit -7: Instruction and Instructional Delivery</td>
<td>149</td>
</tr>
<tr>
<td>Unit -8: Instructional Strategies</td>
<td>173</td>
</tr>
<tr>
<td>Unit -9: Evaluation of Instruction</td>
<td>213</td>
</tr>
</tbody>
</table>
PREFACE

As new developments occur in education, research adds new insights on teaching and learning, new ideas are developed, and as times change, beliefs about curriculum and instruction also undergo transformation. The rightness or wrongness of concepts like curriculum and instruction cannot be established by an individual educationist or even by a group of educators. One index of correctness might be the prevailing opinion of most educators at a particular stage in history. Gaius Julius Caesar and his cohorts of the first century BC had no idea that the oval track upon which the Roman chariots raced would bequeath a word used almost daily by educators twenty-one centuries later. The track the curriculum has become one of the key concerns of today's schools, and its meaning has expanded from a tangible racecourse to an abstract concept.

No education teacher, curriculum coordinator, administrator, or tutor in distance learning system of AIOU would dream of arguing that techniques of coping with the woolly mammoth should be part of the curriculum of schools at the dawn of the 21st century.

The curriculum of the cave dweller, whether informal or non-formal, is quite different from increasingly formal types of schooling that the human race invented over subsequent periods of history. Techniques for coping with the woolly mammoth may well have been paramount concern to prehistoric man.

Planning should begin with the programmatic viewpoint that is, with curriculum decisions, rather than with instructional decisions. Appropriate planning begins with the board aims of education and proceeds through a continuum that leads to the most detailed objectives of instruction. A discipline has its theoreticians and its practitioners.

Consequently, we can conclude that the field of curriculum requires the use of an amalgamation of knowledge and skills from many disciplines. That curriculum theory and practice are devised from other disciplines does not in any way diminish the importance of the field. Curriculum's synthesis of elements from many fields in some ways makes it both a demanding and an exciting arena in which to work.

Though it may be vehemently denied, no one has ever seen a curriculum, not a real, total, tangible, visible, entity called a curriculum. The interested observer may have seen a written plan that may have been called a curriculum. Somehow, the observer knows, probably by word of mouth, that in every school in which
teachers are instructing students a curriculum exists. A written plan provides the observer with an additional clue to the existence of something called a curriculum. But if by some bit of magic and observer could lift the roof of a school in session and examine the cross section thereof, the curriculum would not be apparent. What the observer would immediately perceive would be many instances of teacher-pupil interaction we call instruction.

This textbook on "Curriculum and Instruction" for B.Ed. (4 years) students of Allama Iqbal Open University is really a product of professionalism and dedication of Course Coordinator Dr. Sidra Rizwan and her team and I extend my full gratitude to them.

(Dr. Naveed Sultana)
Chairperson
ACKNOWLEDGEMENTS

In the world of professional education, the word curriculum has taken on an elusive, almost esoteric connotation. The poetic, neutral word does possess an aura of mystery.

Any discipline worthy of study has organized set of theoretical constructs or principles that govern it. Certainly, the field of curriculum has developed a significant set of principles, tried and untried, proved and unproved, many of which are appropriately the subjects of discussion in this text.

Through the process of curriculum development, we can discover new ways for providing more effective pupil learning experiences. The curriculum developer continuously strives to find newer, better, and more efficient means to accomplish the task of educating the young.

One might ask whether the field of curriculum contributes any knowledge of its own to that borrowed from other disciplines. Certainly, a good deal of thinking and research is going on in the field of curriculum. New curricular ideas are being generated continuously.

Curriculum and instruction are viewed as separate but dependent concepts. Curriculum is defined in a variety of ways by theoreticians. This text follows the concept of curriculum as a plan or programme for the learning experiences that the learner encounters under the direction of the tutor of AIOU.

The teacher too, is a curriculum worker who engages in curriculum planning in varying degree, on different occasions, generally under the leadership of a supervisor, be that person a headmaster or principal. How the teacher and the curriculum specialist work together in the two fields of curriculum and instruction is a recurrent theme of this book.

Many people have contributed to the writing and publishing of this text through their insights into curriculum and instruction.

And at the last but not the least I feel it my moral obligation to extend my heartfelt thanks to all the Unit Writers, Reviewers, Editor and Course Team Chairperson for painstaking in this academic endeavor. Any suggestions for improvement from any person will be useful for us for revising this textbook in future.

(Dr. Sidra Rizwan)
Course Coordinator
COURSE OBJECTIVES

After going through this book, you will be able to:

• describe the theory of curriculum.
• differentiate between curriculum planning and development.
• explain various curriculum designs.
• understand the evaluation of curriculum.
• explain the functions of conceptual framework for curriculum design.
• differentiate between teaching and instruction.
• use different models of teaching in instruction.
• apply different instructional strategies in your daily classrooms.
  evaluate your classroom instruction.
Unit -1

THEORY OF CURRICULUM

Compiled By:
Dr. Sidra Rizwan

Reviewed By:
Ms. Tooba Saleem
CONTENTS

Introduction .......................................................................................................................... 3
Objective .............................................................................................................................. 3
1. Nature of Curriculum .................................................................................................... 4
2. Scope of Curriculum .................................................................................................... 7
3. Curriculum Features and Trends ................................................................................ 8
4. Relationship Among Curriculum Components ......................................................... 11
5. Future Trends of Curriculum ..................................................................................... 13
6. Self-assessment Questions ......................................................................................... 21
7. References ................................................................................................................... 22
INTRODUCTION

Curriculum is an area of vital importance to the professional teacher. Over the past two decades, the study of curriculum has become an established part of teacher education programmes and all serving teachers are now familiar with the concepts of curriculum in some way. Similarly, teachers undertaking postgraduate studies and professional development activities have been exposed to the concepts associated with curriculum, and in recent years, the term is being used quite frequently in the media and the community in general.

Such a development is highly appropriate for professional teachers. Curriculum is after all, the very substance of schooling for teachers in schools. Therefore, teachers need to be knowledgeable about curriculum and understand the processes by which curricula may be developed. When teachers consider curriculum issues, for example, they tackle the substantive matter of schooling, which may be expressed in terms of the fundamental questions of curriculum.

In this unit, different concepts associated with curriculum i.e. its nature, definitions and characteristics, need and scope, its relationship with other educational components and future trends have been discussed.

OBJECTIVES

After studying this unit, you should be able to:
1. understand various concepts of curriculum.
2. state the need and scope of curriculum.
3. describe the desirable characteristics of curriculum.
4. debate on the future trends in curriculum.
5. describe the broad components of curriculum and relationship among them.
1. **NATURE OF CURRICULUM**

Curriculum plays a vital role in attaining the aims and objectives of education tend to. It reflects the curricular and co-curricular trends in our institutions i.e. the courses of study, the objectives of education, the methodology of teaching including teaching aids, and evaluation methods. Curriculum comes from the Latin root, Currere which means “to run”. Which later come to stand as the “course of Study”? Curriculum i.e. the sum total of all learning content, experience, and resources that one purposely selected, organized and implemented by the school in pursuit of his peculiar mandate as a distinct institution of learning and human development.

1.1 **Important Definitions of Curriculum Compared**

The term 'Curriculum' is defined in many ways by educators. Some use the term in very limited and specific contexts while others attach very broad and general meanings. Some define it in descriptive terms, i.e., what curriculum is and others in prescribed terms, i.e. What curriculum ought to be., Again curriculum is defined in terms of subjects, activities and experiences.

Following are some of the important definitions of the curriculum:

Alberty, and Alberty (1959) define curriculum “as the sum total of student activities which the school sponsors for the purpose of achieving its objectives”.

In the words of Robert Beck, and Walter Cook, “Curriculum is this sum of the educational experiences that children have in school”.

Blond's Encyclopedia (1969) of Education defines “Curriculum as all the experiences a pupil has under the guidance of the school”.

Bobbit in “‘The Curriculum’ (1918) has observed that “Curriculum is that series of things which children and youth must do an experience by way of developing abilities to do things well that make up the affairs of adult life; and to be in all respects what adults should do”.

Derek Rowntree in A Dictionary of Education (1981) has defined ‘curriculum in these words. “Curriculum can refer to the total structure of ideas and activities, developed, by an educational institution to meet the needs of students and to achieve desired educational aims”.

Doll, in Curriculum Improvement: Decision Making (1982) has stated: “Curriculum embodies all the experiences which are offered to learners under the auspices or direction of the school”.

The first definition lays emphasis on the world ‘sponsors’ and the second definition tends to give importance to spontaneous as well as ‘sponsored’. The third definition stresses the word ‘guidance' in providing experiences. The fourth, definition gives importance to 'adult activities'. The fifth definition denotes that is something, “fixed”. The sixth definition like the fourth one highlights the significance of guidance in providing activities.
1.2 Characteristics of Curriculum

1. **Totality of Activities:** By Curriculum it is meant all the school activities, which are used to promote the development of the pupils. It refers to the totality of subject matter, activities and experiences, which constitute a pupil's school life. Pragmatists have also included the entire range of learner's activities in the curriculum because according to them the child learns by doing.

2. **A Means to an End:** It is known that Curriculum is not an end in itself, but a means to an end. Therefore, it is created so as to achieve the aims of education. That is the reason why different educationists have suggested different kinds of curricula to conform to the aims and objectives ascribed to education. It follows that the curriculum will change with every change in the aims of education.

3. **Total School Environment:** The total environment of the school influences Curriculum. It is made up of everything that surrounds the learner in all his working hours. It is “the environment in motion”. It refers to the total educational programme of the school (school environment) including all experiences, activities and learning, in which the learner is expected to progress and attain the goals of education.

4. **Totality of Experiences:** Curriculum refers to the totality of experiences that a pupil gets in the school (i.e. the class-room, library, laboratory; workshop, playground and in the numerous informal contacts between the teacher and the pupils) as well as outside the school. These experiences help him in the development of personality: Curriculum includes not merely syllabus and books but all those experiences and relationships, which get indulged in by the student both inside and outside the school. Thus, the syllabus specified by the authority should not be taken to mean curriculum.

5. **Mirror of Curricular and Co-curricular Trends:** Curriculum forms the mirror of curricular and co-curricular trends and is able to reflect the curricular and co-curricular trends in our educational institutions i.e. the courses of study, the aims and objectives of education, the methodology of teaching including teaching aids and evaluation techniques.

6. **Mirror of Educational Trends:** Curriculum is the mirror of educational trends. It depicts the total picture about the prevailing educational system. The objectives behind the educational system highlighted through the series of experiences, which are provided by the curriculum.

7. **Development of Balanced Personality:** Curriculum is quite helpful in the development of balanced personality. The activities in curriculum concerning physical, intellectual, emotional, social, economic, aesthetic and cultural development play their role for developing balanced personality.

8. **Process of Living:** Curriculum is a process of living in which interaction between the individual and his environment takes place. Curriculum is concerned both with the life of the individual and his environment.

9. **Dynamic:** A good curriculum is dynamic. The needs and interests of the pupils go on changing with the passage of time. For varying needs different types of activities are required. This tends to necessitate some changes in the curriculum. Curriculum is never static. It has to be different, for different students, different
classes and different schools. It has to be kept dynamic in order to keep with the needs, interests, abilities, attitudes and lives of the pupils.

10. **Mirror of Philosophy of Life:** Curriculum is regarded as the mirror, of philosophy of life. It depicts philosophy of life. Democratic or autocratic way of life is reflected in the curriculum. Each way of life is having different philosophy and hence different goals of education.

11. **Achievement of Goals:** Curriculum is prepared to achieve some set goals and objectives of education, which are set by society. Curriculum helps in achieving the aims and objectives of education.

### 1.3 Need of Curriculum

The following points demonstrate the importance of curriculum:

1. **Achievement of Educational Aims:** Curriculum renders help in achieving the aims of education. Without suitable curriculum aims of education cannot be achieved. In the absence of curriculum it is not possible to do anything systematically.

2. **Fixing Limits:** Curriculum is quite helpful in fixing limits of teaching and learning. It helps in determining the work of the teacher as well that of the pupil.

3. **Development of Democratic Values:** Curriculum is helpful to the students in developing democratic values such as liberty, equality, fraternity, justice, respect for dignity of the individual and group living.

4. **Development of Citizenship:** Development of citizenship is one of the major responsibilities of education. Suitable curriculum is helpful in achieving this aim of education.

5. **Development of Character:** There is no system of education, which does not aim at developing character in the youth. Character can be developed through suitable curriculum.

6. **Satisfaction of Needs:** Curriculum is able to satisfy educational, vocational and psychological needs of students. There is a great variety of interests, skills, abilities, attitudes, aptitudes, and requirements of students.

7. **Criteria of Suitable Teachers:** The curriculum mainly shows what type of teachers is needed in the schools. We should know what type of work they are required to do and this is to be in accordance with the requirement of the curriculum.

8. **Selection of Suitable Methods:** Curriculum makes the teacher to select suitable methods of teaching. 'How to teach' will be determined by what to teach i.e. the curriculum.

9. **Acquisition of Knowledge:** -Curriculum helps the student in the getting knowledge. By studying various subjects laid down in the curriculum the student gets knowledge in conformity with his abilities and level of intelligence.

10. **Development of Personality:** Curriculum is useful in developing physical intellectual, aesthetic, social, cultural, moral, spiritual religious and vocational abilities of the student. Suitable curriculum is necessary for the complete and balanced development of personality.

11. **Reflects Trends in Education:** Curriculum is meant to achieve the end i.e., the
changing aims of education with the changing social requirements. Hence curriculum reflects the trends in education and changes in philosophy. Modern education expects following demands on the curriculum:

i. **Providing Suitable Knowledge**: The curriculum should provide suitable knowledge, which will be quite helpful in the achievement of aims of education.

ii. **Providing Suitable Activities and Experiences**: The curriculum includes well-selected activities and experiences required for development of pupils according to social requirements.

iii. **Providing Wholesome Influences**: The curriculum should provide wholesome school programme for developing the desirable behaviour patterns in the pupils.

12. **Discoveries and Inventions**: At the university or higher level of education the main aim of curriculum is to encourage research and inventions. Thus curriculum acts as a pivot in organizing educational effort on some manageable basis and is the heart of the school.

2. **SCOPE OF CURRICULUM**

The scope of the content concerns question about what to include and what to exclude as for as the selection of subject matter is concerned. It includes the broad form, which is the range and extent of each area to be covered. Determining the scope must include some reference to aims and objectives and range of the learning experiences. Counseling what is to be included in the content is sometimes referred to as determining the scope and it can be seen by operating at four levels.

a) First there must be decisions regarding what to include as a whole in the major area within which the curriculum operates.

b) Should the concerns be with certain subjects that are basic to the understanding of the human caring, such as those within the behavioral science and humanistic?

c) Should the selection drawn from the life science in that these may help the student understand physical factors of care?

d) Should the material be developed that addresses the learning?

e) Is there a need to include a study of the exceptional in terms of psychological considerations that are appropriate for the study of pedagogy? Thus, sort of questioning is directed at the identification of the subjects, which are thought to be eclectically desirable for the underpinning of the base of teaching practice. These have been considered at length before and viewed as the essential antecedents to distinctive instructional knowledge.

Second there is level of scope, which looks at the area of a distinctive subject and considers what might be borrowed and used. This eclectic use of knowledge draws and extracts from the particular established discipline concerned without necessity of accepting the total area of ideas and beliefs within the totality of the discipline.

Third level of scope determination concerns the individual teachers working from curriculum at classroom level and involves independent decisions, about how much
material can be developed within a particular period of time and where the emphasis should be placed within certain subjects and topics.

A fourth level of scope relates to individual lessons concerning the areas to be dealt with and the extent they are to be covered and the level of intellectual difficulty involved that the patterns of the curriculum should adapt a certain idea of scope, which focuses on certain centres of organization. Such centers of organizations can be seen to operate through themes or modular theme.

In dealing, with the scope of the contents certain basic principles can be usefully followed and these can also act as a general guide from making decisions.
1. There is a need to work from basic generalizations or universal thinking about the content progressively towards specific or particular elements.
2. The initiated decision-making should be concerned with the identification of the major areas of knowledge to be included.
3. The content to be included must be educationally worthwhile.
4. The content must occupational be relevant for teaching.
5. The content should be professionally relevant for teaching.
6. The scope must determine the appropriate skills, attitudes and beliefs, which the students need to be aware of.
7. The scope should determine the appropriate intellectual and practical level of difficulty in the content.
8. The scope needs to be taken, into account whether additional, external expertise is needed from outside the field of teaching
9. The scope of the content should reflect the necessary educational technology to be included and the curriculum materials.
10. The scope ought to include consideration of the basic form of assessment and examinations to be used.

Inevitably when the scope of curriculum content has been determined there will be concern for the tradition approaches of the past, which may well be thought to have stood the test of time.

3. CURRICULUM FEATURES AND TRENDS

The six (6) features of a curriculum
1. **Who Teaches? - The teacher**
   Quality Education requires quality teachers. Good teachers bring a shining light into the learning environment. They are ideal companions of the learners. These teachers should be given support with their continuing development in order to keep abreast with the changing demands of a learning society.

2. **Who do teachers teach? – The Learners**
   The learners are at the center stage in the educative process. They are the most important factors in the learning environment. There is no teaching without them. Teachers should understand and accept the learner’s diverse background.
Considering the domain of diversity of learners will allow the individual learner to develop his multiple intelligences at his own pace. Their needs should be addressed and be met that’s why teachers are to provide learning opportunities and varied experiences.

3. **What do teachers teach? – Knowledge, Skills, Values**
   It should be remembered that what students learn will be obsolete in ten years, and half of what they need to know to succeed in work and in life has not yet been fully developed and will have to be learned as they go along in the future. Calculators and typewriters are made obsolete by computers and the next generation will see these being replaced. And so, the value of the educational process lies not just in what they learn, but how they learn, and how good they will be in continuing to learn after they leave school.

   There is no best strategy that could work in a million of different student background and characteristics. However, for teachers to teach effectively, they must use appropriate methodologies, approaches and strategies. Teachers should select teaching methods, learning activities and instructional materials or resources appropriate to learners and aligned to objectives of the lesson. Good teachers utilize information derived from assessment to improve teaching and learning and adopt a culture of excellence.

5. **How much of the teaching was learned? - Performance**
   At the end of the teaching act, it is necessary to find out if they objectives set were accomplished. In curriculum we call this the learning outcomes. These learning outcomes indicate the performance of both the teachers and the learners. Learning outcomes are the product performance of the learners as a result of teaching. Performance is a feature of a curriculum that should be given emphasis. The curriculum is deemed to be successful if the performance of the learners is higher than the target set.

6. **With whom do we teach? – Community Partners**
   Teaching is a collaborative undertaking. While teachers are the focal point in the learning process, they must draw upon the resources of their environment and of their partners to be effective. Partnership is a means and not an end to be pursued in itself. An absence of partnership often means a poor definition of education ends.

**Modern Trends in Curriculum Construction**

1. **Digital Diversity**
   Present age is an age of ICT technology which has touched all walks of human life. Technology has made various tasks easy, convenient and of quality. To survive in the concern filed it is necessary for everyone to have a knowledge and skill of technology. Education makes man enable to contribute, it strengthens the capabilities. For the effective transaction of curriculum ICT is must. Web 2.0 applications must be used for the effective teaching learning process. Curriculum makers should give clear guidelines regarding this. E.g. Teacher tube is very useful source for the educational resources. Khan academy.org also provides good videos, lectures and many more which makes learning meaningful,
easy and effective. Curricki Merlot, K2-12 Hippocamus all these provides educational resources which students can use, edit reconstruct and so on. All these things should be interlined with every curriculum.

2. **Need based Curriculums**

   Researches in all the fields resulted in to specialization. Need based curriculum is the foremost need of the present education system. Many universities are developing need based short term programs for this purpose.

   E.g. Mumbai University has introduced courses like – certificate course in Power Point, certificate course in tally, certificate course in marketing, YCMOU-introduced –English communication skills program for Mumbai Dabawala.

3. **Modular Curriculum with credit base system**

   Modular curriculum gives real freedom of learning, especially in the open learning system his approach has been adopted at first but now majority of traditional universities also accepting his system; this is a real emerging trend in the modern curriculum.

4. **Online courses**

   Need based and choice based curriculums are available online also. E.g. course era .com has introduced many useful need based courses for free of cost. Government also takes initiative for this e.g. Right to Information certificate curse has been introduced by Government of India to the Indian people. This course is free and online.

5. **21st century skills**

   All the curriculums of various courses should focus on 21st century skills. Skills like collaboration, critical thinking, effective communication, multitasking stress management, empathy are must for all the personals.

6. **International Understanding**

   Globalization has made converted the world in to global village. We should consider world as a one family and for this international understanding must be inculcate through curriculum.

7. **Constructivism**

   Constructivist approach believes that learner should be given freedom to construct his/her knowledge. Spoon feeding must be avoided. If a learner is fully active in construction of knowledge then learning process will be highly effective. In all the curriculums constructivist strategies must be given important place.

3.1 **Broad Components of Curriculum**

   The components of curriculum, according to Agnes. S. Robinson (5971). are the goals, objectives, content, processes, recourses and means of evaluation of all the learning experiences planned for pupils both in and out of school and community through class room instruction and related programmes (for example: field trips, library programmes, work experience education, guidance and extra classroom activities.)

Three main components of the curriculum are as under:

- Programme of studies
- Programme of Activities
- Programme of Guidance

**Programme of Studies**: This refers to the various subjects like History, Languages, Mathematics, and Science etc. Emphasis on the study of a subject/subjects has changed from time to time in accordance with the philosophical and sociological ideals. Conservation and promotion of culture has been an important determinant in the selection of the contents of the subjects. In view of the vastness of culture, principle of selection is followed. The level of information to be imparted at a particular stage or class is graded suitably.

The methods of imparting knowledge are determined on the basis of psychological findings especially regarding learning.

**Programme of Activities**: With the changing concepts of education and consequently curriculum an increasing emphasis of being laid on the organization of various activities in the schools. In view of the importance of activities in the promotion of ideals of citizenship, cooperative living and democracy, many educators advocate that curriculum should be envisaged in terms of activities rather than subjects. The principles of learning emphasize that participation in activities goes a long way in sublimating the instincts of children and making teaching-learning more enjoyable as well as-effective.

**Programme of Guidance**: A comprehensive programme of guidance includes helping students solve their educational, vocational and personal problems. With the rapid changes in the society in various fields, it has become very much necessary to include the guidance programme in curriculum.

### 4. RELATIONSHIP AMONG CURRICULUM COMPONENTS

Key elements within the curriculum and the relationships between them are shown in diagram 1 below.

Staff and students are at the heart of curriculum. The relationships between them are shaped by the answers to key questions about

- assessment,
- content,
- learning interactions and
- the connections between those elements.

In the diagram the top question in each pair is a design question for staff. The lower set of questions is commonly asked by students to shape their approach to learning. Curriculum design should help ensure alignment between the answers staff build into their design and those that students find through their experience of the curriculum.
These elements and relationships of course are all context bound. In current systemic approaches to curriculum design, a major element of the educational context is the intended learning outcomes for students of a topic or course.

Intended learning outcomes frame and influence the detail and alignment of assessment, learning interactions and content (Biggs, 1999). Intended learning outcomes describe the characteristics that a student should be able show on successful completion of a course or topic. Assessment gauges the extent of students' achievement of the intended outcomes, learning interactions and content should help to build towards students' achievement of those outcomes.

Alignment in the curriculum: outcomes influence internal elements – elements align towards students achieving outcomes
5. FUTURE TRENDS OF CURRICULUM

The Three Key Curriculum Trends

1. Digital delivery
With the Internet, teachers and student will move beyond the traditional textbook. This will be in the form of digital delivery through such means as Google apps for education, Kahn academy, TED (Technology, Entertainment, Design) talks and other digital sources. At right is a TED talk by Mike Matas, highlighting a "next-generation digital book." As augmented reality begins to become more mainstream, "books" such as this may soon become outdated when people can interact more physically with their information.

No longer shackled to books as their only source of content, educators and students are going online to find reliable, valuable, and up-to-the-minute information. Sites like Shmoop’s fun-focused content on everything from SAT(Scholastic Aptitude Test) prep to the Civil War; Google’s Education apps and sources that teachers can use as teaching tools, such as the SketchUp design software and Google Earth are just a few of the free, easily accessible sources available online.

Add to that sites like the Khan Academy, a collection of thousands of YouTube videos that teach everything from calculus to the French Revolution, TeacherTube’s collection of content, books that have been turned into YouTube videos, as well as sites from museums and art institutions, sites like NASA and the Smithsonian, TED Talks and the thousands of other educational resources available, and you can start to see how online content will be used as a primary resource.

The open-source movement has further pushed online content to include learners and educators in the actual content-creating process. Wikipedia was one of the first open-source sites, and though many still question the accuracy of Wikipedia entries (note the 2005 study showed that the popular website is as reliable as Encyclopedia Britannica), there’s a movement afoot to make it a more trusted source. Revered institutions like Harvard and Georgetown are creating coursework for students out of editing Wikipedia entries.

Following in the steps of Wikipedia — and the collaborative world of Web 2.0 — a growing proliferation of open-source sites aimed at education have sprouted up over the past few years. For both K-12 schools and higher education, sites like MIT Open SourceWare that publishes almost all the university’s content for students, Open Educational Resources, Curriki, Merlot, Connexions, CK12, Scitable, and Hippocampus offer their own expert-written, vetted content. But more importantly, they allow educators and students to add, edit, and change the order of all the information on those sites according to their own needs.
2. **Interest-driven**
The term "student centered" learning is not new, but new technologies allow students to pursue their own interests more easily than before. By allowing each student to pursue his or her passion, educators are seeing that students are more engaged in their own learning. Though students typically have to wait until their third year of college to choose what they learn, the idea of K-12 education being tailored to students’ own interests is becoming more commonplace. Whether it’s through Japanese manga art, Lady Gaga, or the sport of curling, the idea is to grab students where their interests lie and build the curriculum around it.

Every learner counts.
The idea of learner-centered education might not be new — research from the 1990s shows that students’ interests is directly correlated to their achievement. But a growing movement is being propelled by the explosive growth in individualized learning technology that could feed it and we’re starting to see the outlines of how it could seep into the world of formal education.

“The better way is to motivate each student to learn through his or her passion. Passion drives people to learn (and perform) far beyond their, and our expectations. And whatever is learned through the motivation of passion is rarely if ever forgotten,” writes Marc Prensky in his book Teaching Digital Natives.

3. **Skills 2.0**
Getting information from the Internet has been likened to getting a sip of water from a fire hydrant. Students must have the skills to "leverage the collective wisdom that thrives on the Internet" by navigating the many sources of information and connectivity available to them.

Eleven years into the 21st century, the buzz words “21st century skills” are being thrown around in describing what needs to be taught in schools: real-world readiness. Things like collaboration, innovation, critical thinking, and communication are thought to be just as important as history and calculus because they’re practical skills that can be used in the world outside the confines of school.

“One thing is certain,” writes Will Richardson in the comprehensive tome 21st Century Skills: Rethinking How Students Learn: although schools may continue to fundamentally look and act as they have for more than one hundred years, the way individuals learn has already been forever changed. Instead of learning from others who have the credentials to ‘teach’ in this new networked world, we learn with others whom we seek (and who seek us) on our own and with whom we often share nothing more than a passion for knowing.”

Learning to be responsible digital citizens.

The ability to leverage the collective wisdom that thrives online is an important part of building those muscles. But more than just practical skills, it’s crucial for students to be able to navigate the digital world around them without fear. To make sense of the deluge
of information online, to learn what to trust, what to dismiss, to be able to find the gold that exists in the infinite number of Google searches. To know how and what to contribute to the online global community, and how to be responsible digital citizens.

Entire schools are dedicated to teaching skills like learning how to create video games, whether it’s to boost brain power and multitasking skills, or to learn applied physics. The idea is that the process of learning that skill can be put to use in the real world.

5.1 Curriculum of the Future
We are now at a point where we must educate our children in what no one knew yesterday, and prepare our schools for what no one knows yet. - Margaret Mead

In the age of the Internet and Google searches, what does a curriculum have to do with learning? If anyone can simply look up anything with a few clicks of the keys, is it important to guarantee certain nodes of knowledge? Many current educational researchers argue yes, noting that foundational knowledge is an important aspect of analysis and critical thinking. Quoted in Schmoker (2011), Andrew Rotherham, founder of the 21st Century Schools project notes that "content under-girds critical thinking, analysis, and broader information literacy skills. To critically analyze various documents requires engagement with content and a framework within which to place the information. It's impossible, for instance, to critically analyze the American Revolution without understanding the facts and context surrounding that event." The 21st Century Schools project website argues that curriculum that will best prepare students for life and work beyond traditional school will be interdisciplinary, project-based, relevant, rigorous and real-world.

Current Research on Curriculum and Pedagogy
In What Works in Schools, Robert Marzano (2003) argues that 35 years of educational research have actually culminated in an exciting time for educational reform, as the research continues to point to the same evidence. Culling the years of research, Marzano makes the case that one of the most important factors in student success in school is a guaranteed and viable curriculum - a curriculum that provides each student with the opportunity to learn (guaranteed) and provides adequate time to do so (viability). The first action step for schools is to explicitly articulate what content is considered essential for all students, and in order to make it viable, Marzano argues, that content needs to be pared down from the long lists of state standards that have shaped classrooms as teachers have been forced to go for "coverage" over learning.

Mike Schmoker (2011) argues that 21st Century skills (collaboration, critical thinking, etc.) aren't new, but rather that they are newly important as every student needs them to be successful in the post-manufacturing age. He urges schools to say "no thank you" to faddish activities that take valuable time from real learning and to incorporate a "powerful combination of the following strategies for all students:"

Adequate amounts of essential subject-area content, concepts and topics;
Intellectual/thinking skills (e.g., argument, problem-solving, reconciling opposing views, drawing one's own conclusions); and

Authentic literacy - purposeful reading, writing, and discussion as the primary modes of learning both content and thinking skills.

He goes on to argue that content does matter, and that foundational knowledge is key to our ability to think and reason. While Schmoker does not argue that technology itself is bad, he suggests that we should back off on implementing technology that is separate from or takes time away from articulating a clear and coherent curriculum.

At Global Education 2025 we agree in the importance of foundational knowledge and skills to facilitate critical thinking and analysis, but we also find that much of the traditional research ignores the new ways in which students learn. Technology can facilitate the acquisition of that foundational knowledge through engaging students more deeply in the curriculum, and we argue (see Literacy in the Digital Age) that in fact authentic literacy in the year 2025 will necessarily include literacy in the digital world.

5.2 Universal Design for Learning

Why UDL?

The curriculum used in many schools today is a rigid one size fits all approach that fails to account for the diversity of learners in most classrooms. Students who are outside the dominant power structures, racial minorities; gifted or learning disabled, and not from the targeted socio economic class often suffer from the rigidity of the curriculum.

The idea behind Universal Design for Learning (UDL) started as a way to “help learners with disabilities gain access to the general education curriculum” and initially focused on using Assistive Technology to achieve this goal (CAST, 2011, p. 2) The developers of the UDL method quickly realized the “critical role of the environment in determining who is or who is not considered ‘disabled’” and came to the “profound realization: the burden of adaptation should be first placed on curricula, not the learner [and]… that curricula, rather than learners, are disabled, and thus we need to “fix” curricula not learners” (CAST, 2011, pg. 4). Instead of learners being viewed as needing to overcome whatever barriers were in the way of their accessing the curriculum, the curriculum was changed to meet multiple learners’ needs by reducing barriers and provide multiple learning options. The 2011 CAST report on UDL guidelines list the three principles of UDL as:

“Principle I: Provide Multiple Means of Representation (the “what” of learning).
Principle II: Provide Multiple Means of Action and Expression (the “how” of learning
Principle III: Provide Multiple Means of Engagement (the “why” of learning)” (pg.5).

UDL without Technology

Since technology played an important role in the initial creation of the ideas surrounding UDL, it is often viewed as playing a vital role in the successful implementation of UDL. While it is clear that technology easily facilitates the multiple options called for and
“powerful digital technologies applied using UDL principles, it also enables easier and more effective customization of curricula for learners” (“UDL and Technology”, 2011) technology is not required. In a study done by David Rose et al the authors contend that the idea that many teachers who are “attracted to UDL as an idea are unsure whether they can actually implement it in view of their limited access to technology or their limited fluency in its use” is untrue (Rose et al, 2009, p. 5). In their paper they outline a lesson plan about the lifecycle of plants which uses no modern technology but still meets the three UDL principals. Below is a sample of the text from their lesson:

“Principle I: Multiple Means of Representation
Guideline 1: Provide options for perception

- The Seed Lesson has a “natural” advantage in “providing options for perception”: its information is accessible through multiple sensory modalities. Children can learn about the growth of seeds and plants by looking at them, touching them, tasting them, smelling them, and even perhaps by hearing them.
- The various senses of touch (e.g. shape, size, texture, hardness, temperature, etc.), as well as smell, taste, or hearing (shaking and manipulating the plants or seeds), provide students with options to perceive and acquire information in different ways.
- Guideline 2: Provide options for language and symbols
  - In order to “provide options that define vocabulary and symbols,” vocabulary associated in the Seed Lesson is introduced and embedded in a meaningful activity, rich in a relevant, authentic context. Embedding language development into authentic tasks is much more effective than isolated “vocabulary building” or dictionary look-up exercises.
  - Supports such as the classroom “word wall” and student-created dictionaries on vocabulary posters are also effective examples of “providing options that define vocabulary and symbols.”
  - The Seed Lesson also inherently provides “options that illustrate key concepts non-linguistically.” The physical seeds, the plants, and the tools themselves are all “non-linguistic” representations of content from the lesson.
- Guideline 3: Provide options for comprehension
  - In order to “guide information processing,” the teacher develops a checklist to scaffold the information processing of her students. These checklists support students in knowing what features of the plant they should pay attention to.
  - The Seed Lesson also “guides information processing” by providing teachers with the opportunity to model strategies and make their thinking visible for their students through the use of modeling and “think aloud.”
  - The “seed museum” is an example of “providing options to highlight critical features.” By engaging in the activities of identifying, comparing, labeling, and sorting seeds, students begin to learn a great deal about categories, relationships and even taxonomies” (Rose et al, 2009, p. 5 – 6).

In their conclusion the researchers found that the UDL benchmarks can be adhered to and
implemented without any particular modern technology as long as the lesson is well designed from the start.

According to The National Center on Universal Design for Learning, it is important to remember that while technologies do allow for “easier and more effective customization of curricula for learners… it is important to note that these technologies should not be considered to be the only way to implement UDL” (UDL and Technology, 2011). Teachers are able to implement UDL theories in both high tech and low tech classrooms as long as they are “creative and resourceful in designing flexible learning environments that address the variability of learners using a range of high-tech and low-tech solutions” (UDL and Technology, 2011). In addition, simply using technology in the classroom does not mean UDL theories are also being used. It is important for teachers who use technology to work to ensure that the technology used is actually reducing student barriers, not raising them; furthermore, they are still meeting the three principles of UDL curriculum design. The goal of UDL is not solely to facilitate the use of learning technologies but is more to ensure that students become expert learners and learn better from the curriculum.

Why Technology Plays a Central Role in UDL

One of the strongest arguments for using educational technology when implementing UDL lesson planning is “that media such as digital text, digital images, digital audio, digital video, digital multimedia, hypertext, and hypermedia have malleability that can provide opportunities for learning that may not be possible with print text and traditional teaching methods.” Digital media can easily be used to help overcome the “fact the curriculum is often based in the premise that reading, understanding, and producing printed text are difficult for a significant portion of students in public schools, including those with a variety of disabilities” (Castleberry & Evers, 2010, p. 201 – 202). Use digital technology along with UDL lesson planning can help remove the barrier of curriculum being almost solely text based by providing multiple means of interaction with curriculum.

A perfect example of using technology to reduce the barriers and provide access to all students no matter what their socioeconomic background and assigned modern language curriculum is demonstrated by Castleberry and Evers. They published an article explaining how to incorporate technology into language classrooms using the UDL model so that students are provided “with varying needs with equal access to modern language classes”. One of the methods they describe using is WebQuests to provide students with access to news and cultural trends and “access to up-to-date info, which is useful if the textbook being used is out of date or the curriculum has moved away from textbooks all together.” In addition, WebQuests better structure learning by giving “students more focus than when they simply go online and try to find information themselves…[which] means more time is spent on task and in the target language”. Another technology that can be used to help facilitate UDL instruction are graphic organizers, such as Inspiration, which allow students to “make their own graphic organizers to chart the plotline of a story, chart the story’s characters and their
relationships, or study vocabulary by grouping words by meaning or similar structures”.
Castleberry and Evers also talked about minimizing the digital divide by using open
source programs such as Google Docs to allow students to create a “document in which
you and your students can share information, post assignments, and participate in peer
editing is easier than ever and is free of charge” and can also be done at home as well as
at school (Castleberry & Evers, 2010, p. 201 – 205).

Another example of an educational technology using UDL principles was a web-based
collaborative science project for Pre-K – 4th grades called A Dance with the Butterflies.
For this project teachers worked hard and successfully made sure that the what, how, and
why of learning followed UDL principles. McPherson (2009) explains that recognition
networks, the what of learning, “give meaning and understanding to information, ideas,
and concepts. The brain synthesizes information hierarchically using clues from
background knowledge, context, patterns, unique characteristics, and sensory input.” To
ensure that every student was able to access the information via multiple means of
instruction, including Hotlink which linked to video, photos, diagrams, pictures,
QuickTime Movies, and books for shared reading, were used to demonstrate the life
cycle. During the how of learning McPherson explains how “strategic networks in the
brain control the mental and motor action required for thinking and acting strategically”
and how the project used multiple activities for students to practice the concepts for
learning” were used to support the strategic network. Multiple kinds of technology were
used to help students demonstrate the how of learning. Some example include MS
PowerPoint, Audacity, Click Caster and student learning was also demonstrated using
“performances, projects, art exhibits, journals, as well as [students] enthusiasm and
excitement.” Designers of A Dance with the Butterflies also worked to ensure that
students affective networks, the why of learning, were considered in instruction design
because “the affective network may be the most critical to learning but is given the least
priority in pre-service or in-service preparation programs.” The positive stimulation of
the affective filter was accomplished by adhering to the UDL principles of “multiple and
flexible representation, expression, and engagement” which stress the importance of
appropriately challenging instruction, reading materials and meaningful tasks”
(McPherson, p. 230 – 232, 234). In this activity multiple intelligences and skills were
utilized, and students were given a choice regarding the activities they wanted to
accomplish. In addition, a summative activity included students witnessing the life cycle
with real caterpillars worked well to connect students to the learning. This project offers a
good example of UDL lesson design using both high tech and low tech options while
simultaneously being a model which could be easily copied and applied to units covering
a broad range of subjects and topics.

The Future of UDL
In stark contrast to some educators feelings that technology is not necessary to implement
view is Dave Edyburn's (2010) that "rejects the notions" of others who claim that "UDL
is just like assistive technology, such that it can be implemented as no-tech, low-tech, or
high-tech" (p. 38). He argues that since technology has become so important and
ubiquitous in the world we live in “to suggest that the potential of UDL can be achieved
without technology is simply another way to maintain the status quo.” Edyburn worries that as UDL becomes used by more educators it will began to be misunderstood and asserts that, “I have been in many situations where educators, administrators, researchers or product developers were making claims that their instructional practices are based on UDL principles, but I simply was not able to see the connection.” To help ensure effective future implementation of the UDL design principle Edyburn describes the new directions he hopes UDL moves towards. We will focus on the three that we believe will be most relevant in the future.

The first is to recognize that UDL is more than using the latest technology in the classroom, and is not simply using web 2.0 and calling it UDL design because of its multimedia capability. Edyburn believes that there must be “prior evidence that the instructional designer understands academic diversity and is proactively building support that will ensure that individual differences do not mitigate access and achievement [because] designers’ assumptions about diversity directly impact the accessibility and usability of their product design”. In addition, Edyburn finds people's claims that UDL is just good teaching to ring hollow because they “reflect a fundamental misunderstanding of the functions of the design, proactively valuing diversity, and intentionality.” UDL should use “insights gained from research in diverse fields such as brain imaging, learning sciences, instructional design, and technology” to better service students with individual differences, whether cultural, linguistic, social, or socioeconomic because they are often left behind by traditional curriculum. The last major problem that Edyburn describes is assuming the UDL is not an assistive technology. He describes how “UDL is given to everyone with the understanding that those who need specialized support will use the tools when they need them” while also asserting that “academic performance problems are not limited to students with disabilities.” Edyburn does recognize that more research still needs to be done “in the area of cognitive prostheses” to determine what the benefits of “tools and strategies that serve as scaffolds (temporarily needed and discarded) vs. tools that augment performance (always needed for acceptable performance)” but corrects states that 21st century instruction should allow students “to try multiple options to determine which option is ‘just right’ for ensuring their performance acceptable to meet high standards” (Edyburn, 32, 34, 36-38).

What Edyburn envisions is a curriculum that does not simply pay lip service to removing barriers and providing multiple means of engagement but rather one the actually does. Instead of simply using Web 2.0 and claiming that our lessons are now multi modal, differentiated, and interactive, we should use it to build lessons which truly integrate the diversity of our learners. By taking into account the individual differences of learners, and by recognizing how to design lessons to overcome their barriers, UDL discussions will not “render the UDL construct meaningless” thus allowing it to preserve the status quo, which marginalizes low-performing students.” When used correctly UDL solves many of the problems we have in our classes centered around access to content and by focusing on UDL concepts allow learners in our class have the needs better met, not matter what they are” (Edyburn, 2011, p. 38).
International Teaching and UDL
Besides the benefits above, UDL also lends itself well to international teaching because it can easily be used to teach global citizenship and benefit language learners. The central idea behind UDL instruction is that "principles of fairness indicate that equity is achieved when every student receives what he or she needs" (Edyburn, 2010, p. 39). When teaching at international schools, classes are often full of students whose native language is not English yet almost all of the content instruction they receive is in English. Students often struggle, earning bad grades, not because they are not working hard or do not understand the content, but because they are struggling with English. The University of Maryland has created a website called Empowering ESL Students with Universal Design which explains that "it is very important to train mainstream teachers in the principles and procedures of Universal Design in Learning and provide them with strategies in development and implementation of the UDL principles into their instruction" (Yilmazel-Sahin, 2003). The website gives many examples of how UDL ideas can be used in international classrooms, such as providing multiple representations of content so that schools can best serve the needs of the students they teach. In addition, UDL "uses digital based technology that enables teachers to create teaching materials that are easily accessible online by anyone anywhere in the world." The University of the Azores launched a project to teach Portuguese throughout the world using UDL ideas because "UDL is an innovative educational framework that helps educators expand learning opportunities for all learners." The university hopes to "reconnect many people of Portuguese descent to their heritage" and are "pleased to be part of an international project which will be beneficial for all those involved" (Matos, 2011). The university also hopes that by using UDL to teach Portuguese to students from many different cultures and countries throughout the world, they will be able to bring different cultures together in a way that promotes understanding and acceptance.

Activities
Q.1  Consider different definitions and views on curriculum and write your own ideas about the meaning of 'curriculum'.
Q.2  Differentiate between curriculum and syllabus.
Q.3  Compare UDL with and without technology.

6. SELF-ASSESSMENT QUESTIONS
Q.1  Write down different definitions of 'curriculum' quoting at least three educational theorists.
Q.3  Elaborate the features and trends of curriculum.
Q.4  Elucidate the meaning and characteristics of curriculum.
Q.5  Discuss the components of curriculum and their relationship.
Q.6  What are the defects in the existing curriculum? Suggest principles of curriculum construction.
Q.7  Discuss curriculum in the light of future curriculum trends.
Q.8  How can you apply UDL in your classroom teaching?
7. REFERENCES


C U R R I C U L U M  P L A N N I N G  A N D  D E V E L O P M E N T

Compiled By:
Ms. Tooba Saleem

Reviewed By:
Dr. Sidra Rizwan
CONTENTS

Introduction .................................................................................................................. 25
Objective .......................................................................................................................... 25
1. Difference Between Curriculum Planning and Development .................................. 26
2. History of Curriculum Planning in Pakistan ............................................................ 26
3. Characteristics of Curriculum Planning .................................................................... 27
4. Effective Curriculum Planning ................................................................................ 29
5. Major Tasks in Curriculum Development ................................................................ 30
6. Basic Principles of Curriculum Development .......................................................... 31
7. Process of Curriculum Development in Pakistan ..................................................... 39
8. Factors Affecting Curriculum Planning and Development ....................................... 43
9. Self-Assessment Questions ....................................................................................... 44
10. References ............................................................................................................... 44
INTRODUCTION

The curriculum development process systematically organizes what will be taught, who will be taught, and how it will be taught. Each component affects and interacts with other components. For example, what will be taught is affected by who is being taught (e.g., their stage of development in age, maturity, and education). Methods of how content is taught are affected by who is being taught, their characteristics, the setting and so on. In this unit you will be taught about the process of curriculum development its planning, the basic principles that are considered while developing curriculum. Moreover the unit will also highlight the history of curriculum planning in Pakistan and identify the basic characteristics of curriculum development. Lastly, the element of effective planning and development of curriculum will be elaborated with detail analysis of the factors affecting the curriculum planning and development procedure overall.

OBJECTIVES

After studying this unit, the prospective teachers will be able to:
1. understand the process of curriculum development
2. examine the basic principles of curriculum development
3. know the history of curriculum planning in Pakistan
4. identify the characteristics of curriculum development
5. elaborate the element of effective planning and development of curriculum
6. analyze the factors affecting curriculum planning and development
1. DIFFERENCE BETWEEN CURRICULUM PLANNING AND DEVELOPMENT

Curriculum planning focuses on the way in which the curriculum is supposed to structure and deliver. It is a conceptual path that is determined by policy makers and curriculum developers before the development phase of the curriculum.

Curricular planning is referred to the process of looking at the standards in each subject area and developing a strategy to break down these standards so they can be taught to students, varies according to grade level, subjects taught and available supplies. It reflects the vision, direction and purpose of developing a curriculum. It also allows the planners to establish the levels according to which student achievement is to be measured against set standards.

After planning all the major and minor activities for curriculum there comes development phase. The first decisions in the process of curriculum development are concerned with the determination of programme objectives, the selection of subject content to be learned and the selection of appropriate learning strategies. The final product of these activities is a programme outline. A detailed specification of objectives and content within a defined field of study is usually called syllabus. A programme outline is thus broader than a syllabus. It contains both the syllabus and guidelines concerning learning strategies and learning activities to be used in the programme.

2. HISTORY OF CURRICULUM PLANNING IN PAKISTAN

An educational system depends upon a curriculum to systematize and execute the process of education. Curriculum is a channel that helps teachers and other agents to impart education to approaching generations. In order to ensure national cohesion, integration and preservation of the ideological foundation of the State, certain educational functions are the responsibilities of the Federation—via the Federal Ministry of Education. These responsibilities include: curriculum, syllabus, planning, policy and educational standards.

The 1976 Act of Parliament authorized the Ministry of Education (MoE) to appoint competent authorities to perform the following curriculum-related functions:

- In connection with the implementation of the education policy of the Federal Government of Pakistan (GoP), prepare or commission: schemes for studies; curricula, textbook manuscripts and strategic schedules for their introduction in various classes of educational institutions;
- Approve manuscripts of textbooks produced by other agencies, before they are prescribed in various classes of an educational institution;
- Direct any person or agency in writing (within a specified period) to delete, amend or withdraw any portion, or the whole, of a curriculum, textbook or reference material prescribed for any class of an educational institution.
Accordingly, a Central/National Bureau of Curriculum and Textbooks (NBCT, commonly known as the Curriculum Wing) was appointed to supervise curriculum and textbooks development/approval and to maintain curriculum standards from the primary through to the higher secondary levels. As a logical sequence to this action, four counterpart provincial curriculum centres (one in each province) were established to ensure provincial collaboration and evolve consensus in all activities falling within the purview of the Federation. This initiative was followed by the establishment of four Provincial Textbooks Boards (PTTB)—one in each province, within their respective jurisdictions, these PTTBs are responsible for preparing, publishing, stocking, distributing and marketing school textbooks

Boards of Intermediate and Secondary Education responsible for conduct of examinations at Secondary (IX-X) and Higher Secondary (XI-XII) levels were also established at each of the divisional headquarters. Subsequently, another institution was established—the InterBoard Committee of Chairmen (IBCC)—with the following objectives:

- To exchange information among the member boards on all aspects of secondary and higher secondary education;
- To achieve a fair measure of uniformity in academic evaluation standards;
- To promote inter-board curricular and extra-curricular activities;
- To serve as a board chief executives’ discussion and consultation forum for all matters relating to secondary and higher secondary education development, and making suitable recommendations to the GoP;
- Advise on and facilitate the exchange of teachers and students;
- Perform such other functions as may be incidental or conducive to the attainment of the above objectives.

3. CHARACTERISTICS OF CURRICULUM PLANNING

The planning phase lays the foundation for all of the curriculum development steps. The steps in this phase include:
(1) Identify Issue/Problem/Need

The need for curriculum development usually emerges from a concern about a major issue or problem of one or more target audience. This step explores some of the questions that need to be addressed to define the issue and to develop a statement that will guide the selection of the members of a curriculum development team. The issue statement also serves to broadly identify, the scope (what will be included) of the curriculum content.

(2) Form Curriculum Development Team

Once the nature and scope of the issue has been broadly defined, the members of the curriculum development team can be selected. Topics covered in this section include: (1) the roles and functions of team members, (2) a process for selecting members of the curriculum development team, and (3) principles of collaboration and teamwork. The goal is to obtain expertise for the areas included in the scope of the curriculum content among the team members and develop an effective team.

(3) Conduct Needs Assessment and Analysis

There are two phases in the needs assessment process. The first is procedures for conducting a needs assessment. A number of techniques are aimed toward learning what is needed and by whom relative to the identified issue. Techniques covered in this section include: KAP - Knowledge, Attitude, and Practice Survey; focus groups; and environmental scanning.
Analysis, the second part of this needs assessment step, describes techniques on how to use the data and the results of the information gathered. Included are: ways to identify gaps between knowledge and practice; trends emerging from the data; a process to prioritize needs; and identification of the characteristics of the target audience.

4. EFFECTIVE CURRICULUM PLANNING

According to Oliva (1992), curriculum development comprehends planning, implementation and evaluation, particularly with a view to change and betterment. Curriculum development is therefore synonymous with curriculum improvement. In their explanation of curriculum development, Carl et al. (1988), adding the dissemination phase, assert that Curriculum development can be regarded as that process during which the phases of curriculum design, dissemination, implementation and evaluation feature strongly. The development that takes place within these phases, aims at more effective teaching and therefore the ability to plan is a strong characteristic of each phase.

In fact, the definitions given by Olivia (1992) and Carl et al. (1988) have essentially the same meaning with slight differences. Hence the following analysis: While in Oliva’s (1992) definition, the planning phase seems to bear the same emphasis the other phases, the definition given by Carl et al. (1988) is based on the assumption that planning is inherent in all phases of curriculum development. However, the second definition clearly refers to the design phase, which is apparently omitted or not mentioned in the first one. Thus, the design phase as the thinking stage is essentially the planning phase. Nevertheless agree with the point that the planning aspect should be a prominent aspect of each phase of curriculum development.

Another important stage of curriculum development, underlined in the second definition, is the dissemination phase, although it is not explicitly mentioned in the first one. The researcher contends that the planning or design phase involves a consultative process (advisable for successful implementation) then dissemination is automatically included. More about this concept is in the discussion of the phases of curriculum development.
### Table 1

**The curriculum: who makes what choices?**

<table>
<thead>
<tr>
<th>Aims and objectives</th>
<th>Curriculum plan</th>
<th>Methods and approaches</th>
<th>Materials</th>
<th>Evaluation and examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>National aims, as reflected in the National Educational Policy</td>
<td>National framework: syllabus and weightage</td>
<td>Teacher-training courses are designed, also in-service teacher training</td>
<td>Provincial textbooks are reviewed/approved by Federal Ministry through National Review Committee</td>
<td>Inter-Board Committee of Chairman, coordinate activities of the Exams Board</td>
</tr>
<tr>
<td>Evaluation/study reports of curriculum centres provide change direction</td>
<td>Introduce unique cultural/regional aspects, including mother tongue</td>
<td>Teachers’ colleges implement training programmes (pre-service)</td>
<td>Provincial Textbooks Boards commission writers and select material on merit basis</td>
<td>Board of Education holds exams</td>
</tr>
<tr>
<td>School level • Heads • Teachers • Communities</td>
<td></td>
<td>Practice different methodology</td>
<td>Representation of teachers. in the National Review Committee</td>
<td>Trained teachers set the papers and evaluate the script</td>
</tr>
</tbody>
</table>

Source: http://www.fao.org/docrep/009/ah650e/AH650E03.htm

### 5. MAJOR TASKS IN CURRICULUM DEVELOPMENT

The Curriculum Development (CD) process encompasses the design and development of integrated plans for learning, the design of implementation of the plans, and of the evaluation of the plans, their implementation and the outcomes of the learning experience. Curriculum design is a process of critical questioning to frame learning and teaching. The main purpose of the process is to translate broad statements of intent into specific plans and actions. The intention is to ensure, as far as possible, alignment between the three states of curriculum: the planned curriculum, the delivered curriculum and the experienced curriculum.
Essential Considerations for Curriculum Development

- issue/problem/need is identified (issue, what)
- characteristics and needs of learners (target audience, who)
- changes intended for learners (intended outcomes/objectives: what the learners will be able to do)
- the important and relevant content (what)
- methods to accomplish intended outcomes (how)
- evaluation strategies for methods, content, and intended outcomes (What works?).

6. BASIC PRINCIPLES OF CURRICULUM DEVELOPMENT

The principles upon which curriculum development practice has evolved date back to the early decades of this century. Bobbitt's (1918) view that schooling, like production processes in factories, could be reduced to an efficient technique was as commonly accepted by educators in that era as mass media is today. It was not until Tyler (1949) introduced a disciplined approach to instruction that the paradigm of curriculum-making that had prevailed for half a century changed. Educational psychologists, among others, gained substantial credibility in the 1950s and 1960s as behavioral objectives led the list of principles upon which the instructional process would be designed. Narrow preoccupations with discrete and abstract elements of the curriculum (e.g., objectives, teaching methods, and measurement) were the currency of choice in textbooks about contemporary instruction. The one exception to the emergence of what would now surely be called curriculum theory was voiced by Goodlad (1958) who called for a comprehensive and coherent framework for curriculum design. Schwab (1972) supported Goodlad's call for a conceptual system to guide curriculum decision-making. He blamed a reliance on theory for creating the unhappy state of curriculum study and practice. Progress, he claimed, would be by piecemeal improvement not by monolithic revolution and would start from a sophisticated understanding of existing practices and their effects. By the end of the 1970s, it was possible to say that curriculum design, if not curriculum theory, was on the threshold of emerging as a field of study. Following are some of the important principles of curriculum development process (Hansen, 1995):

Principle 1: The Essence of Curriculum Design and the Need for a Conceptual Framework

Curriculum design, like education as a whole, relies on the explanation of phenomena that theory provides, but is not itself theoretical. The terms educational theory or curriculum theory can be employed only through a loose and nonscientific use of the word "theory." At its most scientific, curriculum design, is an applied science; like medicine and engineering, it draws on theory from the pure sciences, but itself develops not theory but operating principles to guide decision making in practical situations. (Pratt, 1980, p. 9)

Pratt's view about the place of theory in understanding the curriculum design process, clarifies the theory/practice dichotomy. Curriculum development, in his opinion, is a
practical phenomenon that does not couple well with theory (i.e., theory does not drive curriculum development and curriculum development does not drive theory). Pratt is convinced that curriculum cannot be governed by theory alone.

Pratt defines design as a deliberate process of devising, planning, and selecting the elements, techniques, and procedures that constitute an organized learning endeavor. Embedded in the notion of designing, according to Pratt, is a deeper set of understandings that imply the production of something that is conceptual as well as material (p. 5). "The curriculum designer … must develop priorities to guide the selection of tasks to be performed, as well as be able to perform them." (p. 10)

Over the past thirty years much of curriculum practice has been driven by theory (e.g., behavioral psychology) in which interaction between teachers and students has been defined in scientific terms like behaviorism or cognitivism. Such theory has driven a curriculum design process that starts with behavioral learning objectives, proceeds with content decisions, and finishes with instructional methods. However, while behavioral theory derives its credibility from scientific knowledge about human behavior, it does not penetrate the complexity of what takes place when a person learns something meaningful. An alternative to the social efficiency model would be to adopt a human development/phenomenological design. A phenomenological approach would proceed based on the needs of learners; it would draw from the teacher's experience with, and knowledge of, human development. In this case the planning or curriculum design sequence would start with an understanding of how people learn, continue with instructional methods that match learning styles, and then progress to content.

The nature of instruction in the two cases may be appreciably different. In the first case the goals and objectives of learning come from experts who believe they know best what should be taught and how it should be taught. Such instruction is predicated on a top-down, linear model, in which knowledge is static and is passed along or transmitted to the young. The second represents a blended model in which the needs of the student come first, knowledge is thought to be dynamic, and learning how to learn is as valid an outcome of schooling as the transmission of existing knowledge.

Adopting and implementing a curriculum design process that is phenomenologically rooted requires autonomy on the part of the curriculum designer. Prospective teachers have to become their own educational architects rather than relying on higher authority prescriptions for what and how to teach. British educator Sir Alec Clegg (1968) made this point forcefully:

I have no time whatever for any system which recruits high-powered thinkers to contrive and foist a curriculum on the schools. This cannot work unless we believe that the teacher of the future is to be a low-grade technician working under someone else's instructions rather than a professional making his own diagnosis and prescribing his own treatment. (p. 9)
The view reached by a teacher development group (Hansen et al., 1992) at the University of Western Ontario (UWO) is that curriculum development, as a practical phenomenon, does indeed contain distinct and identifiable elements. Those elements are similar to those identified by Pratt (1980): (a) the ability to design a set of learning activities within general provincial/state guidelines; (b) consult with community groups, school leaders, fellow teachers, students; and, (c) given the resources available to the teacher and a set of tried and proven curriculum principles, prepare a curriculum prospectus that provides parameters for budget allocation, resource availability, decision making, professional roles, and administrative contingencies.

How do successful technology teachers master the conceptual and practical complexities of curriculum design? Understanding the essence of the curriculum design process begins when teacher candidates grasp the genesis of classroom instruction. Dependence on higher authority prescriptions for what learners need undermines the human development process. It is relatively easy to work with a curriculum that is prescribed. It is more difficult to explore the genesis of that curriculum and decide for oneself, as a professional, if the curriculum content and process encompass what they should. A second stage to the University of Western Ontario (UWO) teacher development project promises to provide further opportunities to explore and evaluate the technology teacher candidates who were a part of the project. Such information will help validate the "curriculum as a practical phenomenon" view of the UWO research group and enhance the field of technological teacher development.

Principle 2: Conceptualizing Attitudes and Beliefs about Learning
Miller and Seller (1985) describe three orientations that are useful and pertinent to developing and understanding one's beliefs and attitudes about learning: (a) the transmission position, (b) the transaction position, and (c) the transformation position. Each is helpful in understanding the philosophical, psychological, and social context in which curriculum is developed. In the transmission position, the function of schooling is viewed as transmitting facts, skills, and values to students. This orientation stresses mastery of conventional school subjects through traditional teaching methodologies, particularly textbook learning. The people most often associated with this view are Thorndike and Skinner. In the transaction position, the student is seen as rational and capable of intelligent problem solving. Education is viewed as a dialogue between the student and the curriculum in which the student reconstructs knowledge through a dialogical process. The historical antecedent is the period of the Enlightenment, and the influential people most closely allied with the transaction position, according to Miller and Seller, are Horace Mann, John Dewey, and Jean Piaget. The concept dialogical is described by Shor (1992) as a third idiom that relates academic language used in schools with or to concrete experience and colloquial discourse use in everyday life. The transformation position focuses on personal and social change, with attention to ecological interdependence and the interrelatedness of phenomena generally. The historical roots of this position are traced to Rousseau. The transformation position conceives of social change as a movement toward harmony with the environment rather
than as an effort to exert control over it. This position embodies the idealistic notion that students should learn what they want to learn.

The systematic inclusion of higher order learning outcomes (e.g., critical thinking) into a curricular strategy provides an example of how conceptualizing attitudes and beliefs about learning can be useful. Previous curriculum theory has been bereft of explanations on how to connect higher order learning outcomes and everyday learning practices (Wotherspoon, 1987). Technological educators have felt for years that their experiential pedagogical models were very productive in teaching inquiry and problem solving skills. Perhaps a belated rationale for that intuitive belief is now possible. Learning materials and activities or subjects can be arranged in patterns that allow for maximum flexibility. The belief that schooling needs to be problem-centered rather than subject-centered is one for which teacher candidates need context. Knowing about the evolution of schooling around separate subjects, and how an integrated curriculum makes it possible to explore relationships between ideas and concepts in different subjects [the transaction position], may free teacher candidates to develop curriculum more creatively. Technology teachers may not initially understand the consequences of integrating curriculum, but they are better off for having a framework through which to classify their actions and decisions about learning activities. Technological education is well served, in this context, by its eclectic nature and pedagogical tradition. Understanding one's own attitudes and beliefs about learning and schooling gives context to the instructional process. It also makes it easier to understand the views about learning held by others.

The attitudes and beliefs principle is relatively easy to conceptualize in the abstract. It is much more difficult to put the conceptualization into practice. Further study and debate among technology teacher educators with knowledge and experience in teacher development is necessary to refine this principle.

**Principle 3: An Epistemological Rationale**

Epistemology, that branch of philosophy that deals with the origin, nature, and limitations of knowledge, has fueled debate in education for years. The argument over academic versus utilitarian curriculum, for example, can be found in the education literature today (Goodson, 1987), as well as at the turn of the century (Dewey, 1916/1966). The duration of the debate is testimony to the potency and relevance of the nature of technological knowledge as an issue.

When education, under the influence of a scholastic conception of knowledge which ignores everything but scientifically formulated facts and truths, fails to recognize that primary or initial subject matter of an active doing, involving the use of the body and the handling of material, the subject matter of instruction is isolated from the needs and purposes of the learner, and so becomes just something to be memorized and reproduced on demand. (Dewey, as cited in Miller & Seller, 1985, p. 65-66)

Dewey's views on problem solving, according to Miller and Seller, are almost household knowledge. "According to Dewey, intelligence is developed through the individual's
interaction with the social environment, particularly through solving problems." (Miller & Seller, 1985, p. 65). The distinction between an academic and utilitarian curriculum can be described as the difference between having knowledge [academic] and being able to demonstrate or apply that knowledge [utilitarian]. Learners in school settings are asked to demonstrate retention of factual information (i.e., short term knowledge, through tests, exams, quizzes, or some form of recall). Do they get a chance to apply that knowledge?

Often the knowledge needed to complete a concrete assignment or project gives students a fuller context in which to make sense of factual knowledge. When a need has been recognized and internalized by the learners, they ultimately respond to the need. The experiential learning model (Lewin, 1975) illustrates the stages in the process (see Figure 1).

![Lewinian Experiential Learning Model](https://scholar.lib.vt.edu/ejournals/JITE/v32n2/hansen.html)

Figure 1: Lewinian Experiential Learning Model. (adapted from Kolb, 1984, p. 21)
Source: https://scholar.lib.vt.edu/ejournals/JITE/v32n2/hansen.html

Lewin borrowed the concept of feedback from electrical engineering to describe a social learning and problem solving process that generates valid information to assess deviations from desired goals. This information feedback provides the basis for a continuous process of goal-directed action and evaluation of the consequences of that action.

Technology educators have a rich tradition of balancing the cognitive, psychomotor, and affective elements of individual development. Little is available in the literature, however, to describe and give credence to that balance. Lewis (1993) describes the technological education epistemological issue in terms of curriculum authenticity. "The validity of human endeavor as the basis of knowledge in its own right has, to a large extent, to do with the authenticity of the curriculum. How authentic is the curriculum if it denies everyday existence … if it relegates human practices supportive of life to an inferior plane?" (p. 19). The curriculum authenticity notion is one that aligns well with the need for learning that is contextualized.
The word *praxis* is helpful in describing what it means to apply knowledge or to know how to do something. *Praxis*, according to Pratt (1980), typifies experiential learning (p. 11). The importance of the connection between current action, future consequences, and alternative action cannot be overstated. Can *knowing ever be separated from knowing how* if real learning is to take place? Pring (1976), made the distinction between *knowing that* (i.e., belief-type knowledge) and *knowing how* (i.e., procedural-type knowledge) when he stated that "I feel that the neglect of this distinction is responsible for so much dead weight in the curriculum… . We are so concerned with 'knowing that' that we forget that much of this kind of knowledge is a very sophisticated reflection upon 'knowing how,' an attempt to make explicit and put into statements the principles that are already operating in successful practice" (p. 19).

Schwab's (1972) introduction of practical versus disciplinary modes of inquiry, in combination with Lewin's experiential learning model and Pring's procedural knowledge, provide a starting point for an epistemology of technological education. A preoccupation with a discipline as opposed to a practical mode of inquiry in learning, according to Schwab, is too narrow a conception of knowledge. Practical, as opposed to disciplinary, modes of inquiry aim "to discover the relations which exist or which can be induced among the various subject areas." (Schwab, 1972, p. 87). The new broad-based technological education programs being introduced in school systems around the world (e.g., communication technology) may represent Schwab's practical mode of inquiry at its best. If such programs do contextualize knowledge, as Layton suggests, they certainly represent an area for further investigation.

Formulating an epistemological rationale for the technological education program area generally points to and amplifies the importance of having technological education teachers become explicitly aware of the origins, nature, and limitations of the knowledge they are using. Further research on the importance and place of technological knowledge is needed if technological education is to assume its rightful place in the curriculum of the schools.

**Principle 4: The Curriculum Development/Planning Process**

The curriculum development process can be puzzling to new teachers. The process is often discussed in the literature as a blueprint for developing a curriculum that has applicability across a range of subjects (i.e., a macro view); however, it is also defined as the plan teachers adopt in the classroom for organizing learning activities (i.e., a micro view). Both interpretations of curriculum development are valid and helpful in conceiving and continually implementing successful learning activities for students. Having developed a conceptual framework and an understanding of the essence of curriculum design, it is important for aspiring teachers to become familiar with macro and micro level planning, learning theory, and student assessment/program evaluation.

Macro level curriculum planning in North America, whether highly centralized or decentralized, is often the result of task force reports and competing prescriptions of what should be taught in schools. The end products of such processes are interesting to
analyze. The Commonwealth of Virginia (1992), for example, has produced a statewide technological education curriculum for its schools and school teachers. That curriculum has been carefully and professionally crafted, covers a specific band of the technological education curriculum spectrum, provides educators with excellent curriculum materials, and demonstrates one process for developing curriculum. An alternative approach has been adopted in the Province of Ontario, where only general learning outcomes are specified at the provincial level. Responsibility for the more detailed development of the curriculum has been embraced by school boards and systems of school boards. Both approaches to the development of a new curriculum—one centralized, the other decentralized—are valid and merit ongoing analysis and study.

Given the rapidly changing social needs and conditions facing North American school systems, it is difficult to imagine curriculum planning taking place only at the macro level. Pratt warns about the pitfalls of removing the planning process too far from the learner. He asserts, "in most schools, the programs offered reflect the areas of expertise and interest of teachers rather than an analysis of the needs of learners" (p. 52). Pratt (1989) is convinced senior educators act too arbitrarily on behalf of the many constituents served by schooling:

Curriculum development is a process carried out almost entirely by educators, and the need for client opinion is ignored. Also ignored is the need for empirical data, both from needs assessment before the curriculum is developed and from field testing after development. The approach therefore is almost entirely bureaucratic and political: the development of curriculum is viewed as a quasi-legislative activity of writing rules and regulations. (p. 308)

Curriculum planning that is guided or informed by some rational process would seem to merit the attention of all educators. Before curriculum can be formulated, the curriculum designer must take into account a combination of constituent needs—including community, schools, teachers, and students. Because communities and regions are very different, student groups vary, schools differ, and teachers are not all alike, the idea of one prescribed curriculum for everyone is limiting.

With respect to the individual learner, one observation is central to curriculum planning; learning is an interactive process. Constructivist learning theorists (Driver & Bell, 1985; Scott, 1987) may have a valid argument when they claim that learners have a base of experience through which new meaning can be constructed. They also may be right in assuming that people are purposive beings who set their own goals and control their own learning. In short, learning is best characterized as an adaptive process as articulated in principle number three, in which learners interact with their environment. The role of instructor is an intermediary one.

Another element in the curriculum planning process involves program evaluation. Few issues among education practitioners garner as much attention as assessment of student achievement and the relation of such assessment to program effectiveness. It is risky to
make easy generalizations about the study and practice of program evaluation (macro or micro level). Measuring student achievement and determining the effectiveness of planned learning activities are, right or wrong, integral elements of schooling as it have evolved. Kramer (1990) provides an interesting perspective for consideration and a provocative illustration of how assessment of student achievement might be portrayed.

Kramer (1990) advocates that an evaluation scheme that (a) recognizes hard work, (b) provides opportunities for students to interact formally and informally, (c) promotes engagement between instructors and students, and (d) creates avenues for out-of-class use of skills. The object of curriculum planning, according to Kramer, is not to make an obstacle course. Schools and technology teachers would do well to consider Kramer's four rules of engagement:

1. A successful program would always feature or be characterized as having a hard working student body;
2. Students participating in a successful program talk a lot;
3. A successful curriculum would be one in which students and instructors were genuinely engaged; and
4. The context in which performance is usually assessed should reach beyond the school or institution (e.g., technological education students design a computer program for a hospital in which they are volunteers).

Meaningful learning experiences in school classrooms can be designed, presented, and shaped through a rational process. The importance of community input and support in that process cannot be overstated.

**Principle 5: The Political Realities of Curriculum Development**

To say that curriculum development matters in education are often highly politicized is an understatement. The reality in curriculum development at the school and university level is that many subject groups compete for a place in the school curriculum. Teacher education and, by association, schooling, are not neutral in their organization and curriculum content. Political scientists are thus inclined to ask questions like the following: Does the current spotlight on technological education constitute a conspiracy by government to augment business and industry interests, or is it a reform for the well-being of students, schools, and society? The importance of understanding political reality is that it forces educators to consider the way interest groups compete for the establishment of their vision of a particular area of the curriculum (McCormick, 1990).

Goodson (1991), an educational sociologist, argues that curriculum practice "is a multifaceted concept, constructed, negotiated, and renegotiated at a variety of levels and in a variety of arenas" (p. 49).

Technology educators who eschew organizational dynamics in favor of artisanship might benefit from having a regard and respect for partisan realities. How often has one heard of an instance where resources destined for technological education were reappropriated elsewhere? The controversial status of technological education in the common curriculum, in countries where status issues are prominent, is an example issue. Goodson
and Mangan (1991) describe a social constructionist perspective that may be of use in having the accomplishments of technology educators recognized and valued more consistently:

It [the social constructionist perspective] demands that, as we seek to understand a social phenomenon, we must also recognize the importance of the larger social context in the construction of individuals' interpretive practices. This requires some grasp of the historical background of the phenomenon under study, as well as a recognition of the political and economic relationships within which sense-making takes place. (Goodson & Mangan, 1991, p. 11)

The underlying assumption in this view is that reality is socially created and sustained and often dissected or deconstructed (sometimes with ulterior motives in mind). Technology educators will need to ask whether or not any interest group has or is framing/constructing a new reality in which technological education is either credited or discredited. MacKenzie and Wajcman (1985), sociologists of technology, argue that technologists and technology educators have perilously ignored social concerns for too long.

7. PROCESS OF CURRICULUM DEVELOPMENT IN PAKISTAN

Federal Ministry of Education is responsible for the national cohesion, integration and preservation of the ideological foundation of the states.

Responsibilities
Federal Ministry of Education is responsible in making of:
Curriculum
Syllabus
Planning
Policy
Education standards

National Bureau of Curriculum and Textbooks (NBTC)
Also known as curriculum wing, supervises curriculum and textbooks.
Approves and maintain curriculum standards from the primary to the higher secondary levels

Provincial curriculum Centre
Every province has a provincial curriculum centre to ensure provincial collaboration.
Involve in all activities falling within the purview of the federation.
Each Province has its own Provincial Textbook Board (PTTB)
PTTBs are responsible for:
Preparing
Publishing
Stocking
Distributing
Marketing school textbooks

**Curriculum Design and Development Process**
Curriculum Design and Development
Evolution of curriculum objectives
Development of scheme of studies
Development of syllabus of each subject
Development of textbook, instructional material
Approval of textual material
Teacher training

**Developing Objectives**
Objectives are derived from
Recommendation of the National Education Policy
National Level Seminars
Forums of research studies
Inter Board Committee of Chairmen
NBCT prepares the draft of objectives.
Circulated in provincial institutions responsible for curriculum development
Objectives are finalized.
Translated to the specific teaching objectives

**Factors considered in finalizing the objectives**
Be precise
Assist in the selection of teaching strategy
Produce a designated behavior pattern
Enables teachers to evaluate the quality and effectiveness of learning

**The studies scheme**
It is based on three key factors:
The national education policy
Market demand
Global issues
Task work in this area is undertaken with the participation of:
Provincial government
Research organizations and experts
Feedback of the IBCC

**Development of syllabi**
It is based on objectives and scheme of study. Subject specific syllabi are prepared in consultation with:
Syllabi must satisfy the following conditions:
Based on the needs of learner:
Take into account the existing knowledge and the environmental experience of the learner.
The development level of the learner is considered in the cognitive, effectiveness and psycho-motor domain.
Content should be focused on attaining the objectives.

Curriculum Development at Higher Education Level
In 1973’s constitution, Government placed education on the concurrent list.
Federal Government took the responsibility to determine the curriculum text boards, policy, planning and standards of education

Higher Education Commission
In December, 1976 Federal Government appointed University Grant commission (now HEC) as the competent authority to look after the curriculum revision work at bachelor level and onwards. It also looks after the degrees, certificates and diplomas awarded by degree colleges, universities and other institutions of HEC.

Procedure to Review/ Revise Curriculum
In 45th meeting of Vice-Chancellor’s Committee it’s recommended that the UGC should review the curriculum of a particular discipline after every three years. HEC adopted a procedure to review/ revise curriculum. In ensure the quality of the updated curricula.

Steps Involved in Curriculum Review/Revision Process
PHASE-I Curricula under consideration
PHASE – II Circulation of the draft curriculum

PHASE-I
Step – I
Constitution of National Curriculum Revision Committee (NCRC) in the subject
The Vice-Chancellors of all public and private sector universities, R&D organizations, Directorate of colleges and industries in relation to the subject under consideration, are requested to nominate their representatives, for appointment of National Curriculum Review Committee (NCRC).

Step –II
Assessment/Analysis of the existing Curriculum
The existing curricula are circulated amongst the members of NCRC to discuss it with their colleagues and bring collective proposals for review and revision of existing curricula in relation to objectives (of teaching the subject).
Scheme of studies
Course-content
Weight age
Reading materials
Teaching strategies
Methods of evaluation
In this way participation of maximum number of subject experts is ensured

Step – III
NCRC meeting-I:
Draft preparation.
The first meeting of the NCRC is organized at the HEC Headquarter Islamabad or one of its
Regional Centers at Peshawar, Lahore and Karachi
Other universities at different places may also be chosen to serve the purpose.
The meeting draft of the revised curricula, after detail discussion and deliberation on the
proposals prepared by the NCRC members.

PHASE – II
Circulation of the Draft Curriculum
Step – IV
Appraisal of the first draft
The first draft prepared is circulated among the universities, institutions and organization
and is viewed for its further improvement.
The view/recommendations collected on the draft curriculum were deliberated upon to
design and finalize the curriculum of specific subject of study in a final meeting.

Step – V
NCRC meeting-II:
Finalization of draft
The second meeting of the NCRC is held to finalize the draft of the revised curriculum in
the light of comments/suggestions/recommendations received from the college and
university teachers and institutions all over the country.
The meeting would again take 3 days to finalize a curriculum.
The draft so finalized supports the expertise of all faculty members of the subject under
consideration, who are directly or indirectly involved in this process.

Step VI
Approval of the revised curricula by the Vice-Chancellors’ Committee:
The final draft curriculum is submitted to the Vice-Chancellors’ Committee for approval.

Implementation
The curricula designed is printed and sent to universities/institutions for its
adoption/implementation after the approval of the Competent Authority.
8. FACTORS AFFECTING CURRICULUM PLANNING AND DEVELOPMENT

There are several obstacles affecting the quality and effectiveness of curriculum development process in Pakistan.

- Lack of subject area expert.
- Textbook often do not reflect the curriculum.
- Lack of follow-up of actual curriculum implementation in classroom practice.
- Curriculum often different from the official curriculum documentation.

The details about these factors are given below:

**Expertise**

Some serving teachers are, of course, involved in curriculum development. But notwithstanding their outstanding subject area expertise, their contribution to the curriculum development is, for all practical purposes, nominal. The main reason for this is that they lack the requisite expertise. The existing training programmes provide little exposure in this area, and the teachers’ academic qualifications do not necessarily contribute to curricular creativity. Therefore, at best, the teachers are able to provide opinions about the compatibility between specific concepts or content and the intellectual development level of the children in a specific age group or grade. However, this guidance often reflects, in part, a particular situation with which the teachers have been dealing (e.g. children from a rural background) and, in part, their own capability to render a specific concept comprehensible.

**Textbook quality**

Textbooks often do not reflect the curriculum. Of course, it requires considerable experience and skill to: translate the curriculum in a style that covers the objectives; simultaneously take into consideration the children’s language proficiency and background knowledge; and concurrently arrange the content in a logical sequence in a stimulating manner. But the all-important self-assessment questions or activities (especially questions focused on higher order skills) are invariably missing.

**Implementation and follow-up**

The third problem is that there is lack of follow-up of actual curriculum implementation in classroom practice. The curriculum actually implemented is generally different from the official curriculum document. The classroom teacher, who primarily focuses on the textbooks and assessment, does not take into account the educational objectives. No evaluation of the implemented curriculum is carried out; hence no feedback is received to revise the curriculum. In short, each of the steps in the curriculum development process, as outlined above, tends to occur in isolation from the others and there is no visible coherent curriculum development activity.
Activities
1. Find a curriculum document of any subject of secondary level and identify the gaps in the curriculum document and textbook of that subject.
2. Find the local curriculum document of any subject at secondary level and compare it with the curriculum document of any developed country of that same grade and subject.

9. SELF-ASSESSMENT QUESTIONS

Q1. Elaborate the different stages of curriculum planning.
Q2. Explain the difference between curriculum planning and curriculum development.
Q3. What are the key factors that influence the implantation of curriculum in effective way?
Q4. Analyze the pitfalls of curriculum development in the context of Pakistan.

10. REFERENCES


Web Links:
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https://scholar.lib.vt.edu/ejournals/JITE/v32n2/hansen.htm
### CONTENTS

Introduction ........................................................................................................................................ 49
Objective ............................................................................................................................................... 50
Curriculum Design................................................................................................................................ 51

1. Traditional or Subject Centered Design......................................................................................... 53
   1.1 Teacher-Centered Curriculum.................................................................................................. 56

2. Learner Centered Design.................................................................................................................. 58
   2.1 Activity Based Curriculum....................................................................................................... 60
   2.2 Integrated Curriculum................................................................................................................ 62

3. Problem-Centered Designs............................................................................................................ 64
   3.1 Core Learning Designs............................................................................................................. 67

4. Self-Assessment Questions............................................................................................................. 68

5. References....................................................................................................................................... 68
INTRODUCTION

Curriculum design (also curriculum organization) refers to the ways in which we arrange the curriculum components. Regardless of the underpinning curriculum model, all curriculum designs endeavor to address four curriculum components: Why do we initiate instruction or aims? What should we teach to realize our set aims and objectives (content or subject matter)? How can we communicate target learning experiences (pedagogy, instruction)? What have we realized and what actions should we take accordingly in relation to the instructional program, learners, and teachers (evaluation)? Although most, if not all, curriculum designs include these four components, they significantly differ in how they address these elements, because of the curriculum philosophy and model on which a design is based. For example, subject-matter-based designs, which overemphasize the logical organization of content, and the learner-centered ones, which focus on the learners and their needs, entail different treatments of the four curriculum components. The following sections very briefly highlight the process of curriculum design. This will involve general overviews of major sources, curriculum conceptualization and curriculum design stages.

Curriculum planning and design are essential preliminary ingredients in the curriculum development process. This unit examines the concepts of curriculum designs, how they function as an integral part of the curriculum development process and what this means to curriculum developers. It also examines the nature of the design process and considers the principal forms or types of common place curriculum designs found in schools and educational systems. It then suggests some ways by which curriculum designs are created.

Before the detailed construction of a curriculum document, curriculum developers are involved in planning and designing their proposed curriculum. Indeed, it is not possible to develop a curriculum without curriculum design, though some curriculum developers address this issue more systematically and substantively than others. Moreover, while curriculum planning and design may be essentially conceptual in nature, they may be quite overt acts of groups of curriculum developers who, together, resolve issues relating to the design and planning of the proposed curriculum.

This unit argues that a well-conceptualized approach to the process of curriculum development is an effective use of resources and hence suggests that time will be profitably spent on substantive curriculum planning and design. As in Karen Zumwalt’s view professional teachers should have the knowledge to enable them to create sound educational programmes, it is essential that teachers have knowledge of some planning process that enables them to think about curriculum beyond the individual lesson.
OBJECTIVES

After studying this unit intensively, the students may be able to:
1. define the curriculum design.
2. explain the types of curriculum design.
3. explain the functions of conceptual framework for curriculum design.
4. explain critical problems of curriculum design.
5. explain the criteria for a desirable curriculum design.
6. explain the patterns of curriculum design.
7. describe the steps in curriculum design.
8. describe the benefits of curriculum design.
CURRICULUM DESIGN

A curriculum is a planned sequence of learning experiences. In designing a curriculum, whether for a whole degree programme or for a particular unit, you are planning an intellectual 'journey' for your students - a series of experiences that will result in them learning what you intend them to learn. Typically these experiences will include attendance at lectures and classes, work in small groups, private study, preparing work for assessment and so on.

Curriculum design includes consideration of aims, intended learning outcomes, syllabus, learning and teaching methods, and assessment. Each of these elements is described below.

It also involves ensuring that the curriculum is accessible and inclusive, i.e. those students with disabilities, and from all backgrounds, can participate in it with an equal chance of success.

Aims
The aims of the curriculum are the reasons for undertaking the learning 'journey' - its overall purpose or rationale from the student's point of view.
For example, a degree programme may aim, among other things, to prepare students for employment in a particular profession. Likewise a unit within the programme may aim to provide an understanding of descriptive statistics. The stated aims of a curriculum tell students what the result of studying it is likely to be.

Note that the aims are the educational purposes of the curriculum. To attract more students to study may be one of your aims in offering the programme or unit, but it is not an aim of the curriculum you offer.

Intended Learning outcomes
Learning outcomes are what students will learn if they follow the curriculum successfully (i.e. if they complete the programme or unit and pass the assessment).

Sometimes the phrase 'intended learning outcomes' is used to refer to the anticipated fruits of completing the planned 'journey'.

In framing learning outcomes it is good practice to:

a) Express each outcome in terms of what successful students will be able to do. For example, rather than stating 'students will understand why....' say 'students will be able to summarise the main reasons why...' This helps students to focus on what you are expecting them to achieve and it assists you in devising appropriate assessment tasks (see below).

b) Include different kinds of outcome. The most common are cognitive objectives (learning facts, theories, formulae, principles etc.) and performance outcomes (learning how to carry out procedures, calculations and processes, which
typically include gathering information and communicating results). In some contexts affective outcomes are important too (developing attitudes or values, e.g. those required for a particular profession).

**Syllabus**

This is the 'content' of the programme or unit; the topics, issues or subjects that will be covered as it proceeds. In selecting content for inclusion, you should bear the following principles in mind:

a) It should be relevant to the outcomes of the curriculum. An effective curriculum is purposive, clearly focused on the planned learning outcomes. The inclusion of irrelevant topics, however interesting in themselves, acts as a distraction and may confuse students.

b) It should be appropriate to the level of the programme or unit. An effective curriculum is progressive, leading students onward and building on what has gone before. Material which is too basic or too advanced for their current stage makes students either bored or baffled, and erodes their motivation to learn.

c) It should be up to date and, if possible, should reflect current research. In some disciplines it is difficult to achieve the latter until students reach postgraduate level, but in many it is possible for even first year undergraduates to be made aware of current research topics.

**Attributes of Curriculum Design**

Designing curricula is like designing any object, process, or system in important respects, it follows that it has these attributes:

Curriculum design is purposeful. It is not just to “have” a course of study. Its grand purpose is to improve student learning, but it may have other purposes as well. Whether the purposes are in harmony or in conflict, explicit or implied, immediate or long-range, political or technical, curriculum designers do well to be as clear as possible about what the real purposes are, so that they can respond accordingly.

Curriculum design is deliberate. To be effective, curriculum design must be a conscious planning effort. It is not casual, nor is it the sum total of lots of different changes being made in the curriculum over weeks, months, and years. It involves using an explicit process that identifies clearly what will be done, by whom, and when.

Curriculum design is creative. Curriculum design is not a neatly defined procedure that can be pursued in a rigorous series of steps. At every stage of curriculum design there are opportunities for innovative thinking, novel concepts, and invention to be introduced. Good curriculum design is at once systematic and creative—feet-on-the ground and head-in-the-clouds.

Curriculum design operates on many levels. Design decisions at one level must be compatible with those at the other levels. A middle-school curriculum design that is incompatible with the elementary- and high-school designs will almost certainly result in
a defective K-12 curriculum, no matter how good each part is on its own. By the same token, the middle-school curriculum itself cannot be effective as a whole unless the designs of its grades are in harmony.

Curriculum design requires compromises. The challenge is to come up with a curriculum that works well—perfection is not its aim. In developing a design that meets complex specifications, trade-offs inevitably have to be made among benefits, costs, constraints, and risks. No matter how systematic the planning or how inventive the thinking, curriculum designs always end up not being everything that everyone would want.

Curriculum designs can fail. There are many ways in which curriculum designs can fail to operate successfully. A design can fail because one or more of its components fail or because the components do not work well together. Or, the people who have to carry it out may reject the design because they misunderstand it or find it distasteful. In most cases, however, curriculum designs are neither wholly satisfactory nor abject failures. Indeed, a key element in curriculum design is to provide for continuous correction and improvement, both during the design process and afterward.

Curriculum design has stages. Curriculum design is a systematic way of going about planning instruction, even though it does not consist of some inflexible set of steps to be followed in strict order. Curriculum decisions made at one stage are not independent of decisions made at other stages, and so the curriculum-design process tends to be iterative, various stages being returned to for reconsideration and possible modification. But recognizing the different tasks and problems at each stage is important in making the process work. The stages, which are considered in turn in the rest of this chapter, are establishing curriculum-design specifications; conceptualizing a curriculum design; developing a curriculum design; and refining a curriculum design.

Types of Curriculum
There are many types of curriculum design, but here we will discuss only the few.

1. TRADITIONAL OR SUBJECT CENTERED DESIGN

Subject matter is the most used and accepted curriculum design; it is also the oldest curriculum design. The earliest example in the medieval era in the Middle Ages the monastery and Cathedrals and the organizations of the seven liberal arts in the schools of ancient Greece and Rome. The seven liberal arts were consisted of two divisions:
1. Trivium
2. Quadrivium

These subjects were broad. In the modern period the Trivium was further divided to include literature and history and the quadrivium to include algebra, trigonometry, geography, botany, zoology, physics and chemistry. In this manner subjects added one after the other so much so that in 1930 there were over 300 different subjects.
After centuries the curriculum design of the seven liberal arts are still the nucleus of the subject curriculum. In a subject base curriculum every subject is separate unit. In this kind of curriculum four or five subject are placed in curriculum and each subject has a separate teacher. Every teacher try to teach his own subject, no one intervene in the subject of other teacher

**Characteristics of Subject Curriculum**

**Information for future use**
Importance is given to acquire knowledge and information for future use, only those subjects are considered important which have a value and the individual have benefit from it in future (vocational importance). Adult problems are given importance and the problems of children in youth are ignored

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

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

**Each subject is a separate entity (unit) with a logical organization of its own:**
Importance is given to the acquisition of skills, facts and information for vocational purpose in different logically organized subjects. The teaching staff teaches different subjects and they do not discuss or plan subject together.

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

**Subject matter is selected by adults/experts for teaching learning situation:**
The content of the subject is selected in advance before the teaching learning process; the subject matter is logically organized from simple to complex with the hep of the experts, specialists, teacher’s supervisors, planners, writers and administrators.
Learning subject matter is an end in itself:
The main focus of the teachers, administrators and students are to complete the subject matter, to cover all the topics which are provided in the course outline by listening to lectures, studying the recommended textbook. It is all preparation for examination on the part of students and teachers and it shows the influence of the subject centered approach. For the teacher to finish the textbook on time is a great accomplishment.

Requirements for the Optimum Operation of Subject Curriculum
i. Trained Teachers with mastery in a subject and expert in methodology are required to teach.
ii. A separate classroom for each subject and each level.
iii. A fixed time table is required for different subjects according to importance of the subjects and age in curriculum.
iv. Special arrangements for guidance physical education, indoor and outdoor activities, tours and examinations etc.

Need of Textbooks and guide books for subject centered curriculum.

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

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

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

3. The critics also have a viewpoint that the fact is the students know about the history what a few men had done in the past but they do not know about the current situation in their own country and what are the hopes and desires of Pakistani people and what are the social problems they have today here.

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

Defense of Subject Curriculum
1. The supporter of the subject base curriculum rejects the claim that it did not develop child’s thinking. They argue that it is the most suitable method for the development of critical thinking in an individual but if one can’t then the problem lies in the instruction not in the curriculum itself. A vast majority of countries select this method and they are producing botanist, doctors and geologist and so on.
2. The other claim that it is fragmentary and compartmentalized is also not true about subject base curriculum alone because no one can study one subject in one session at once in any kind of curriculum. They use the principle of selection in the selection of course contents. In a sense anything that is learnt is a fragment and is a part of some larger unit.
3. It gives the teacher the idea what to teach and the student what he supposed to learn and how much time they have to cover the course of the subject. This provides them with a constant source of security and a self-evaluation process through which they know how much course they have cover and how to complete.
4. Subject base curriculum use a logically sound framework for the organization of subject matter, it used the cause and effect principle in science and the chronological order of the historical events but they assumed an order and are reliable for learning experiences
5. The evaluation of subject base curriculum is easy. It use the achievement based testing in the evaluation to find the mastery of the subject matter in the individual.
6. It has a bright future. Subject approach is useful for specialization in any branch of knowledge. It is more effective.

1.1 Teacher-Centered Curriculum
Teachers participate in a variety of curriculum activities at classroom level. These are the very core of their daily teaching tasks and include such activities as selection of specific content, selection of teaching approach, use of audio-visual aids and so on. In recent years teachers have become increasingly involved in a broader level of curriculum decision-making such as involvement in major curriculum projects. It mostly involves few teachers, although some teachers participate in syllabus committees.

At the school level, however, staff members are becoming more responsible for a vast array of curriculum decision.

In countries where they have adopted teacher centered curriculum the schools have considerably greater responsibility for curriculum development. In these schools teachers have become involved, willingly or unwillingly, in more school-level curriculum decision-making.

Regardless of the state in which one teaches, it has become obvious in recent years that all teachers are participating more in curriculum decision-making at the school level. The
nature of this participation may be seen in the various roles that teachers adopt in the decision-making process.

It is suggested that teachers may participate in any combination of curriculum decision-making roles at the school level:
1. Implementers
2. Adapters
3. Developers
4. Researchers

1. Implementers.
As an ‘implementer’ or ‘receiver’, the teacher’s role is to apply the developed curriculum. In this role the teacher has a minimum of responsibility and involvement in the curriculum development phase of the curriculum process, though he has a significant role in the application phase of this process.

2. Adapters.
As an adapter, the role of the teacher is just the same as implementer. This is somewhat conceptual term which indicates that the teachers become ready to accept the curriculum in order to implement it.

3. Developers.
As a developer, the teacher’s role is to take part in the curriculum development process. In Pakistan, some representative teachers are being invited to attend various meetings held by the higher authorities in order to make contributions in the curriculum development or curriculum evaluation process.

4. Researchers.
Curriculum is a dynamic process. Keeping in view this characteristic, there is a need to conduct research in order to bring about desirable changes in the curriculum. Teachers in most of the countries and also in Pakistan are taking part in various types of researches in curriculum development process. The nature of these researches is.
   i. To review the curriculum.
   ii. To evaluate the curriculum.
   iii. To change the curriculum etc.

a) Advantages of Teacher’s centered Approach
- As the curriculum is designed by the teacher, it become easy to achieve the desired goals.
- Subject matter become psychologically sound due to its relevance with interests, needs and level of the children.
- Content/Subject matter is logically arranged.
- Irrelevant material/Subject matter is avoided.
- Teachers feel comfortable and confident in the classroom activities.
- Democracy is encouraged.
- Co-operation is developed.
- Society/Community is also involved (directly or indirectly) in the development of curriculum.
- No objection is raised by the teacher in connection with the availability of sources and resources.
b) Limitations
If this approach is followed in Pakistan then the following limitations may hinder the process.

- A change in the attitude on the part of learners, teachers and community is difficult to develop.
- Lack of sources and resources.
- Hindrance due to rigid administration, planning and management.
- It will become difficult to maintain a common standard in various institutions.
- The existing curriculum for the teaching training institutions is not suitable for the teacher centered approach.
- A drastic change in the examination system/evaluation will be required.

2. LEARNER-CENTERED DESIGN

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

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

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

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

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

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

a. Characteristics of Learner Centered Curriculum
The curriculum design on the needs and interests of student has these characteristic and features.
1. The curriculum plan is based on knowledge of learner’s needs and interests in general and diagnosis the specific needs and interests of the population served by the plan.
2. The curriculum plan is flexible; to accept new modification to conform to the needs and interests of particular learner’s In fact, in some curriculum designs the learner may develop his or her own curriculum plan with the guidance of a teacher.
3. The learner is consulted and tutored individually at difficult points in the curriculum and instructional process.

Learner centered approach is an example of the applications of needs and interests (activities) approach. Subject obstacles were lower or removed as teachers combined subjects to study social problems identified by students. Students in the experimental schools were more successful in college. This practice has ever lasting effect on secondary education.

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

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

The major use of the needs and interests design in curriculum planning is in the provision of options for individual students. For example, the middle schools provide many special interests activate exploratory courses and other experiences aimed at giving each student opportunities to explore their own interest.

Currently the movement in higher education and expansion of it by “Open University” arrangements illustrates the feature of the needs and interests design. Drunker (1969) argues for continuing education which assumes “that the more experience in life and work people have, the more eager they will be to learn and the more capable they will be of learning.
Curriculum plans emphasizing the option concept:
- The options are based on knowledge of learner characteristic.
- Scheduling and other arrangements facilitate selection and choice of options, with counseling services available to help students.
- Students are actively involved in planning and evaluating the options in general and for themselves in particular.

2.1 Activity Based Curriculum
The Activity Based Curriculum is also called project curriculum or an experience curriculum but the name activity is a fundamental conception. Activity Curriculum has a long history. The title “Activity Curriculum”, however, did not come into general use before 1920, although Dewey used the expression “Activity Programme” as early as 1897 in a talk to the parents and teachers at his laboratory school in Chicago (U.S.A). Activity is the natural urge of the child. He wants to do things by himself. When curricular material is translated in terms of activity, it is known as activity curriculum. Learning of the prescribed material takes place through activities. Activity is used as a media or means for imparting knowledge and skills. Activity is the greatest motivation for child he enjoys the freedom of expressing his potentialities during activities.

These activities should not merely be considered as physical activity but also intellectual activity. The educator (teacher) should engage pupils in activities in such a way that while manual skills are gained there should be mental satisfaction found in the work. The students should not be passive listener they should be active participants in the process of learning.

True learning is experiencing, while activity is the process then experience becomes the product of activity. Activity results in experience, in fact activity and experience cannot be separated from each other. A purposeful activity must end in gainful experience. The school must, therefore, plan its activities in such a way that students gain mastery on various experiences. Such type of projects should be completed under a problematic situation in a natural setting.

Characteristics of Activity Curriculum

1. Children’s Interest Determines the Educational Programme
The primary principle of the activity curriculum is that the interests and purposes of children determine the educational programme. The basic principle of the activity programme refers to the felt needs of children and not of adults because the educational programs are aimed at doing something in the best interest of the children and not for adults only. It is the task of the teacher to discover these interests and to build educational activities upon them.

Whims (urges) must not be considered as basis of an educational programme. The interest of the students must be carefully analyzed and then accepted. These intended courses of actions are accepted after their consequences are reviewed. The subject matter
is a mean of fulfilling the purposes of an individual or a group and as a result of
manipulating subject matter children learn within the boundaries of group interests. The
teacher’s responsibility is to find out the interest of individual students and of the groups.
He helps children to select the most interesting activity for study; Building a cage for an
animal, making preparation for a field trip, gathering information on a current political
affair, running a school store, planning family budget.

2. **The Activity Curriculum is not Planned in Advance**
The teacher discovers the interests of students in group or individually. He guides the
students in the selections of activity and their interest among activities. He helps them to
plan and carry out these activities according to their interests. He also guides the
individual or group in assessing what they have accomplished in the process. This is the
responsibility of the teachers to make plans for him how to guide the students and their
activities in the classrooms. Although teacher does not come into the classroom with a
preplanned subject matter he does come with ideas and a background of experience of the
students and their interests. These are his working tools.

3. **Activities are Planned Co-operatively by Students and the Teacher**
The teacher and the students plan the activities cooperatively what needs to be done? And
how, first of all objectives are formulated with the help of the teacher, and then the class
students considers means of teaching the objectives e.g. a group has determined to
improve the beauty of its own classroom. The class may be divided into small groups so
that students can talk with their seat mates, a student from each of these groups report to
the total class. There should be ample opportunity to organize for investigating, seeking
information, selecting materials, interviewing people and carrying on the activities
needed to solve the problem, in each of these steps the students take part in making
decisions and they assume full responsibility for it. Here the teacher is guide in the
process of learning, he guide the students how to select group leaders and how to make
intelligent decisions. Most important is the quality of thinking that goes in the group.
There is a given and take of ideas in the group. The opinions of different students in the
group are evaluated by the students to select the best idea of all. It is really a laboratory
for learning group processes.

4. **Problem solving is the Dominant Method of Activity Curriculum**
In the activity curriculum, the teaching learning process consists largely of problem
solving. In the pursuit of interests in the groups to complete an activity various
difficulties will arise. The teacher and his students are to find ways of overcoming these
obstacles. As the interests of children lead to problems requiring a great diversity of
content so the subject matter from almost every field of
Knowledge is used in the activity curriculum. But the subject matter is studied as a means
of solving problems and not as subject.

5. **Teacher Assists the Group as a Resource Person**
Here the teacher works as a guide and resource person. He serves to small groups, to
individual students. He sometimes leads the discussion to help the students to analyses
the problem. He works with them in improving their skills. He is a part of the total
learning situation rather than task master.
6. Practice and Individual Assistance are Provided as Needed
In activity curriculum the need for practice grows out of the learning situation. As the students show the need for working on spellings of certain words, or grammar, the teacher gives them the opportunity to learn and practice these skills. If the students ask the teacher to help them in writing a letter to invite a speaker, the teacher will not write the letter for them, but he will guide them. He will work with them on the use of words and thus he will encourage them to write a letter inviting the guest speaker.

Requirements for Optimum Operation of Activity Curriculum

1. Training of Teachers
Teachers should have a broad general education with specialized training in child and adolescent development, guidance and methods of teaching.

2. Physical Features of the School
Activity base curriculum needs spacious Building, grounds and classrooms to permit as many activities as possible. Will light rooms and have ample facilities; for displaying and decorations devised by children. The ample use of school grounds in addition to outdoor class work and for other countless outdoor activities in which children may engage as they follow their interests.

To complete these possibilities the school will require several times more space than they have now.

Tentatively ten acres of land (one acre= 4940 sq. yards) would likely be the minimum to meet the needs of an activity curriculum. To those critics who criticize the activity curriculum as the most expensive pattern of curriculum organization, the advocates of an activity programme will give a reply that there is no such thing as “a good cheap education:.

2.2 Integrated Curriculum
Defining Integrated Curriculum
- Integration: the unification of all subjects and experiences.
  What exactly is integrated curriculum? In its simplest conception, it is about making connections. What kind of connections? Across disciplines? To real life? Are the connections skill-based or knowledge-based?
- Correlation may be as slight as casual attention to related materials in other subject areas, a bit more intense when teachers plan it to make the materials of one subject interpret the problems or topics of another

Arguments for Supporting Integrated Curriculum
There are two strong arguments supporting an integrated curriculum. First, there is simply too much information to be covered in the traditional structure of a forty or fifty minute class period. Secondly, most subjects are taught to students in isolation from other related information. Advocates of an interconnected curriculum believe that individuals learn best when encountering ideas that are connected to one another. A strong belief system exists supporting that "all things are connected."
What do the critics say?
Critics of integrated curriculum have formulated several arguments against the idea;
- First, it is sometimes appropriate for information to be taught within the content area. Some concepts run the risk of becoming confused when connected to unrelated subject matter.
- Secondly, most teachers have always been a part of a somewhat modernist method of teaching. Therefore, implementing integrated curriculum becomes increasingly more difficult.
- Third, critics claim that many teachers may lack knowledge and skills of the various disciplines.
- Finally, a key criticism of integrated curriculum is assessment. Schools continue to struggle with effective methods to assess student achievement in regard to higher level thinking and deeper understanding. In order for integrated curriculum to replace traditional teaching styles, the entire structure of the school needs to be change. Frankly, this is a change that many modernist teachers are not willing to accept.
- The integrated curriculum approach is successful in making students more aware of content area connections, challenging students, providing a learning environment, supporting academic and social needs, dissolving the boundaries among the disciplines, and fostering stronger student/teacher relationships.

Characteristics of Integrated Curriculum
- Focuses on basic skills, content and higher level thinking
- Encourages lifelong learning
- Structures learning around themes, big ideas and meaningful concepts
- Provides connections among various curricular disciplines
- Provides learners opportunities to apply skills they have learned
- Encourages active participation in relevant real-life experiencescuriosity, motivates, and challenges learners
- Provides a deeper understanding of content
- Offers opportunities for more small
- Accommodates a variety of learning styles/theories (i.e., social learning theory, cooperative learning, intrinsic motivation, and self-efficacy) and multiple intelligences

The organization of integrated curriculum is a post second world war occurrence. This phenomenon gain greatest support in the 1960s. Based on the essential organization of content, as in the subject design, the academic disciplines design emphasizes on the role played by those diverse entities called academic disciplines. Thus it is clearly defined in terms of knowledge, skills and values.

Objectives of Integrated Curriculum in Pakistan
1. The basic objective of integrated curriculum is to emphasize the learning and basic language skills for the children of class’ I to III this would increase the literacy rate of the country.
2. Reeducation of text books to one or two only so that the Teachers may focus their attention on the improvement of language skills of the students and along with it they may be able to impart the concept of other subjects.
3. In integrated curriculum, the mental level and interests of the children acquire the central place which is the basic condition of acquiring knowledge.

4. Interesting textual material not only attracts the children but also provides opportunities to groom up their mental abilities. Therefore efforts have been made to prepare the integrated curriculum with the following comprehensive general objective.

5. The general objective of the integrated approach is to make a clear relation between various subjects (having similar concepts) so that the learners may apply their knowledge in real life situation.

### 3. PROBLEM CENTERED DESIGN

A problem-centered approach provides a vehicle to achieve the goals and objectives identified in the curriculum. Evidence from research suggests that our students are proficient in procedures but do not have the conceptual understanding to solve problems. Problem-based learning (PBL) is a learning strategy that incorporates specific instructional preplanned activities, focused on a relevant learner problem, and allows for the flexibility of the situation and the learners in the classroom. This course model has its foundation in the theories of humanistic, learner-centered, and problem-centered design approaches. The goals of PBL are to help students develop flexible knowledge, effective problem solving skills, self-directed learning, effective collaboration skills and intrinsic motivation. Problem-based learning is a style of active learning.

Working in groups, students identify what they already know, what they need to know, and how and where to access new information that may lead to the resolution of the problem. The role of the instructor (known as the tutor in PBL) is to facilitate learning by supporting, guiding, and monitoring the learning process. The tutor must build students' confidence to take on the problem, and encourage the students, while also stretching their understanding. PBL represents a paradigm shift from traditional teaching and learning philosophy, which is more often lecture-based. The constructs for teaching PBL are very different from traditional classroom/lecture teaching.

**Advantages of Problem Based Learning**

Like any other learning theories, problem based learning too has its advantages and limitations when it is implemented in the curriculum. Since this experiment began in medical education, strong opinions have been expressed and questions raised regarding the effectiveness and educational efficiency of problem based learning approach in teaching sciences basic to medicine. Following are the advantages and limitations of problem based learning.

1. **Fosters Student-Centered Learning**

In problem based learning the students are actively involved and they like this method. It fosters active learning, and also retention and development of lifelong learning skills. It encourages self-directed learning by confronting students with problems and stimulates the development of deep learning.
2. **Upholds Lifelong Learning**
Project based learning gives emphasis to lifelong learning by developing in students the potential to determine their own goals, locate appropriate resources for learning and assume responsibility for what they need to know. (Candy PC. Self-direction for lifelong learning: a comprehensive guide to theory and practice. San Francisco: Jossey-Bass, 1991.). It also greatly helps them better long term knowledge retention.

3. **Prominence on Comprehension not Facts**
Problem based learning focuses on engaging students in finding solutions to real life situations and pertinent contextualized problems. In this method discussion forums collaborative research take the place of lecturing.

4. **In-depth Learning and Constructivist Approach**
PBL fosters deep learning by involving students with the interaction of learning materials. They relate the concept they study with everyday activities and enhance their knowledge and understanding. Students also activate their prior knowledge and build on existing conceptual knowledge frameworks.

5. **Augments Self-learning**
Students themselves resolve the problems that are given to them, they take more interest and responsibility for their learning. They themselves will look for resources like research articles, journals, web materials etc. for their purpose. Thus it equips them with more proficiency in seeking resources in comparison to the students of traditional learning methods.

6. **Better Understanding and Adeptness**
By giving more significance to the meaning, applicability and relevance to the learning materials it leads to better understanding of the subjects learnt. When students are given more challenging and significant problems are given it makes them more proficient. The real life contexts and problems makes their learning more profound, lasting and also enhance the transferability of skills and knowledge from the classroom to work. Since there is more scope for application of knowledge and skills the transferability is increased. It will be also very helpful to them not only to visualize what it will be like applying that knowledge and expertise on their field of work or profession.

7. **Reinforces Interpersonal Skills and Teamwork**
Project based learning is more of teamwork and collaborative learning. The teams or groups resolve relevant problems in collaboration and hence it fosters student interaction, teamwork and reinforces interpersonal skills. Like peer evaluation, working with group dynamic etc. It also fosters in them the leadership qualities, learn to make decision by consensus and give constructive feedback to the team members etc.

8. **Self-motivated Attitude**
Researchers say that students like problem based learning classes rather than the traditional classes. The increase in the percentage of attendance of students and their attitude towards this approach itself makes it very clear that they are self-motivated. In
fact it is more fascinating, stimulating and one of the good learning methods because it is more flexible and interesting to students. They enjoy this environment of learning for it is less threatening and they can learn independently. All these aspects make students more self-motivated and they pursue learning even after they leave the school or college.

9. **Enriches the Teacher-student Relationship**
   Since the students are self-motivated, good teamwork, self-directed learning etc. the teachers who have worked in both traditional and project based learning formats prefer project based learning. They also feel that Problem based learning is more nurturing, significant curriculum and beneficial to the cognitive growth of the student.

10. **Higher Level of Learning**
    The PBL students score higher than the students in traditional courses because of their learning competencies, problem solving, self-assessment techniques, data gathering, behavioral science etc. It is because they are better at activating prior knowledge, and they learn in a context resembling their future context and elaborate more on the information presented which helps in better understanding and retention of knowledge.

**Limitations of Problem Based Learning**

1. **Time Consuming**
   Although students generally like and gain greater ability to solve real-life problems in problem based learning courses, instructors of the methodology must often invest more time to assess student learning and prepare course materials.

2. **Traditional Assumptions of the Students**
   The problem of the problem based learning is the traditional assumptions of the students. Most of the students might have spent their previous years of education assuming their teacher as the main disseminator of knowledge. Because of this understanding towards the subject matter students may lack the ability to simply wonder about something in the initial years of problem based learning.

3. **Role of the Instructor**
   The instructors have to change their traditional teaching methodologies in order to incorporate problem based learning. Their task is to question students’ knowledge, beliefs, give only hints to correct their mistakes and guide the students in their research. All these features of problem based learning may be foreign to some instructors; hence they find it difficult to alter their past habits.

4. **Pupil’s Evaluation**
   The instructors have to adapt new assessment methods to evaluate the pupils’ achievement. They have to incorporate written examinations with modified essay questions, practical examinations, peer and self-assessments etc.
5. **Information Overload**
Since it is self-directed study the students may not be sure of how much self-directed study to do and what information is relevant and important unless they are properly guided by the instructors.

Project based learning is one of the effective ways of delivering education. It has several advantages over traditional methods but at the same time few disadvantages. When we see in comparison with the traditional method the students from project based learning curriculum seem to have better knowledge retention and it also provides interesting and challenging educational atmosphere to students. Therefore, the beneficial effects of project based learning should not be underestimated. It can make students’ learning experience very interesting and give students very fascinating or enthraling.

### 3.1 Core Learning Designs

Many forms of core learning design may be distinguished and there is evidence of this design having been used for some time (Smith. Stanley & Shores 1950; Zais. 1976, CDC, 1980, Kirk, 1986. Marsh & Stafford 1988).

The notion behind a core design, usually called a core curriculum, is that there exists a set of common learning’s (knowledge, skills and values) that should be provided to all learners in order to function effectively in a society. The core concept, however, does vary considerably in interpretation and one writer has suggested that it is possible to distinguish no less than six forms of the core design (Zais. 1976; 42-3). For our purposes, it is sufficient to understand that a curriculum may be organized around the idea of a core as a set of learning essential for all students.

#### Characteristics of Core Curriculum

The characteristics of core curriculum are as follows:

i) It utilities the problems of personal and social development common to all youth.

ii) It develops these problems without reference to the traditional subject-matter fields.

iii) It encourages the use of the problem-solving technique to attack problems.

iv) Its provision for individual and group guidance.

v) The core programme provides means for developing social competence.

#### Key Issues in Core Design

The key issues in any core design for a curriculum are:

1) What should be included in the core?

2) How large should be core be, i.e. what percentage of the total contents within the written curriculum should be?

3) What should be excluded from the core?

4) Is a core required of all learners?

The notion of a core design is usually referred to a small, separate group of subjects that are compulsory to study, while the curriculum is topped with options or elective subjects. Typically, the 'core' consisted of English, Mathematics, Science, Social Studies (or
equivalent subjects such as history and geography) and physical education for these was the subjects studied by all students. To these were then added a number of optional subjects such as fine art, home economics, music, languages, and so forth.

The emphasis of this approach to core curriculum was that all students would experience a set of common and essential learning that were necessary for learners to function effectively in society.

**Activities**

1. Name the two divisions of subject centered design.
2. Enlist the advantages of teacher centered approach.
3. State the requirements for optimum operation of activity curriculum.

**4. SELF-ASSESSMENT QUESTIONS**

Q. 1 Write a note on concept and attributes of curriculum designs.
Q. 2 Discuss the subject-centered and learner-centered designs.
Q. 3 Critically analyze the integrated curriculum design.
Q. 4 Describe the problem-centered curriculum design.
Q. 5 Explain the criteria for a desirable curriculum.

**5. REFERENCES**


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CURRICULUM EVALUATION

Compiled By:
S. M. Shahid

Reviewed By:
Dr. Sidra Rizwan
## CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>71</td>
</tr>
<tr>
<td>Objective</td>
<td>71</td>
</tr>
<tr>
<td>1. The Aims of Curriculum Evaluation</td>
<td>72</td>
</tr>
<tr>
<td>2. Educational Goals and Curriculum Objectives</td>
<td>73</td>
</tr>
<tr>
<td>3. Curriculum Models</td>
<td>75</td>
</tr>
<tr>
<td>4. Curriculum Evaluation Process</td>
<td>83</td>
</tr>
<tr>
<td>4.1. Steps in the Evaluation Process</td>
<td>84</td>
</tr>
<tr>
<td>5. Methods of Curriculum Evaluation</td>
<td>84</td>
</tr>
<tr>
<td>5.1 Problems of Research Design in Curriculum Evaluation</td>
<td>85</td>
</tr>
<tr>
<td>6. Procedures of Curriculum Revision</td>
<td>87</td>
</tr>
<tr>
<td>7. Revision of Curriculum for Secondary Classes in Pakistan</td>
<td>90</td>
</tr>
<tr>
<td>7.1 Process of Curriculum Revision</td>
<td>91</td>
</tr>
<tr>
<td>7.2 Approach of the Curriculum</td>
<td>91</td>
</tr>
<tr>
<td>7.3 Proposed Curriculum Implementation Framework for Punjab</td>
<td>93</td>
</tr>
<tr>
<td>8. Self-Assessment Questions</td>
<td>101</td>
</tr>
<tr>
<td>9. References</td>
<td>102</td>
</tr>
</tbody>
</table>
INTRODUCTION

Evaluation of the curriculum of any specific course deals with all the educational outcomes related to it, whereas measurement deals specifically with those characteristics that can be easily quantified. In evaluation, such techniques may have to be evolved as may help the educators to analyse and assess the merits and shortcomings of any curriculum. Further, any problems involved in implementing a curriculum successfully have to be identified and resolved in order to achieve its educational objectives.

The procedures of curriculum evaluation involve certain steps, which should, however be flexible enough to be adjusted as per exigencies arising from time to time. These procedures are useful in guiding the thinking of those who are carrying out the evaluation. The steps, which have to be evolved by careful and intensive analysis of the types of the tasks involved. While the strategy for curriculum evaluation should be adjusted according to the particular problems and situations under consideration, certain models that will be described in this Unit, can play a very important part in the process. Curriculum evaluation should not only be a means for judging educational effectiveness, but also if applied critically and intelligently, should lead to useful decisions that can serve as a powerful force to improve the educational process as well.

In this Unit, aims of curriculum evaluation, educational goals and curriculum objectives, curriculum models, designing evaluation process, models of curriculum evaluation, procedure of revision, and curriculum revision at secondary level in Pakistan has been discussed at length.

OBJECTIVES

After going through this Unit, the prospective teachers will be able to:
1. mention the main purposes of curriculum evaluation and the extent to which an evaluation can be made.
2. analyse the goals and objectives of educational programmes for relating them to the evaluation.
3. design strategies and methods for the evaluation of specific educational programmes in accordance with the needs of the situations.
4. suggest means of improving educational curricula and processes in the light of the evaluation of the programmes.
1. THE AIMS OF CURRICULUM EVALUATION

When curricular innovations are introduced, it is an important task of educators to determine their effectiveness. An assessment of any new programme has to be making to find out if the desired outcomes are being achieved; and to what extent, if at all, it results in significantly better learning than the existing programme. The use of evaluation techniques should enable curriculum workers to make study progress in improving the curriculum.

The major aims of curriculum evaluation may thus be summarized as follows:

a) To determine the outcomes of a programme;
b) To help in deciding whether to accept or reject a programme;
c) To ascertain the need for the revision of the course content;
d) To help in further development of the curriculum materials for continuous improvement.

Careful evaluation should, therefore, demonstrate the strengths and weaknesses in the curriculum so that necessary changes can be made in the instructional programme.

In testing and measurement, greater emphasis, is placed upon those characteristics that are easy to quantify and, thus important outcomes such as problem solving, creativity, critical thinking, work habits, and cultural appreciations tend to be neglected. Uncritical use of testing and heavy reliance on test results has caused a widespread spurious sense of certainty about educational accomplishments. Evaluation, however, is aimed at measuring all the educational outcomes, not just those that lend themselves easily to quantification.

The purposes of evaluation for curriculum innovations include the collection of information to be used as:

a) Feedback to the innovators for further revision of materials and methods;
b) Input for decision-making in the course;
c) Empirical data on behaviour changes under curriculum treatment.

Professional educators who implement the curricula should be held accountable for successful achievement of deviational outcomes. This involves

a) Developing improved, more comprehensive measurements of pupil performance,
b) Making, analysis of the contributions made to the pupils' performance by educators, administrators, planners, institutions and other agencies in the educational process.

Curriculum evaluation, which should assess all aspects of the programme, should give a clear picture of the educational processes and products that should not only have prognostic value as regards the success of the programme, but should also have a diagnostic value in adapting and improving the programme to the satisfaction of all concerned.
2. EDUCATIONAL GOALS AND CURRICULUM OBJECTIVES

Statement of goals and objectives of the curriculum have many valuable uses. The congruence between the intent of the curriculum and the actual educational outcomes has to be investigated. In addition to abilities, the importance of attitudes, values, interests and sentiments in the educational process has been increasingly recognized. The behavioural approach to the statement of objectives has gained a new impetus because of its value in the educational process. Valid evaluation is facilitated by a statement of the aims and objectives of education, arranged in a hierarchy of national, regional, local, subject and course areas drawn to blocks and units and even to daily lesson.

A) Development of Educational Goals
Philosophers and educationists have for centuries been discussing the aims and objectives of education. How more than ever, the problem of educational goals is a top priority though still a largely unresolved problem. The main reason for this is that in spite of all our efforts, the goals produced are essentially non-functional, even when stated in behavioural terms.

The goals of education usually tend to be non-functional for the following reasons:

i) In the statements of objectives, too much reliance is placed on ‘continued development of values and character’ or ‘perfecting the intrinsic powers of every citizen’ While these sound enthusiastic, these lack clarity about the goal and hence the actual educational process that needs to be adopted for achieving these goals.

ii) There is a lack of public involvement with the educational experts and educators in the clarification of objectives. Sometimes public participation narrows down the goals, but ultimately the goals are to be controlled by them.

iii) The goals have too often been assumed as given and concentration has been directed to how to achieve the so called assumed or given goals. Changes in goals, that form a part of the educational process, have to be created by every generation.

iv) Those at the helm of affairs tend to interpret the goals according to their perception, which makes them too hazy.

B) Role of Educational Measurement in Defining Goals
Tests are related to the major concerns in the educational process and should provide help in the development of meaningful goals. Without proper measures of the outcomes, there would be no direction as to the goals. Without proper evaluation, would be hazy and narrowly defined. Along with the measurement of basic skills and mastery of academic subjects, academic honestly and a sense of self should be used in the discovery and development of educational goals.

C) Consideration in Selecting Goals
The criteria for the goals of education should be developed in relation to:

i) The values of the society as a whole and of individual members;

ii) The historical background of the society.
iii) The potential urge of the society to move forward and progress.
iv) The present standards and abilities of the students: and the possibility of achieving the goals.
v) The educational philosophies of the institutions and the extent of teach- ability of the subject-matter under study.
vi) Different theories of learning
vii) The measurability of the goals, if and when achieved. A goal, the achievement of which is not measurable is a vague goal.

D) Educational Objectives and their Taxonomies
As you will recall from unit-6 objectives are more precise than goals. Broad goals are analysed and made more specific and useful as building blocks for instruction.

You will recall that the taxonomy developed by Bloom and others in USA was divided into three domains.
ii) The Affective Domain: It deals with attitudes, values, interests, appreciations and socio-emotional adjustment.
iii) The Psychomotor Domain: It deals with manual and motor skills i.e. the activities to be performed as a result of bodily movements.

E) The Cognitive Domain
The cognitive domain is divided into:
i) The acquisition of knowledge.
ii) The development of intellectual skills and abilities necessary to use knowledge.

More specifically, you may remember that Bloom's categories were as follows:
i) Knowledge, recalling facts, concepts, trends generalizations, principles, etc.
ii) Comprehension, understanding, translation, interpretation, and, extrapolation.
iii) Application, using abstractions in particular concrete situations.
iv) Analysis, breaking down for clarity of thinking of elements, relationships and organizational principles.
v) Synthesis, producing a unique, communication by recognizing and rearranging the facts.
vi) Evaluation, judging in terms of (i) internal evidence (logical) and (ii) external evidence (consistency of facts developed).

F) The Affective Domain
As you have already read in this unit as well as in unit-6, the affective domain is concerned with values, interests etc. This domain has the following categories.
i) Receiving (attending), awareness, willingness and selected attention.
ii) Responding, acquiescence, willingness and satisfaction in, response.
iii) Valuing acceptance of and preference for a value and commitment.
iv) Organization conceptualization as a value and organization of a value system.
v) Characterization of a value or a value complex as a generalization.
G) The Psychomotor Domain
This domain includes the following:
   i) Reflex movements: Functions at birth like stretching, stiffening, relaxing.
   ii) Fundamental movements such as walking, running, jumping, pulling, pushing etc.
   iii) Perceptual abilities visual and auditory discrimination, bending, bouncing, eating, writing etc.
   iv) Physical abilities such as strenuous activity, moving quickly and precisely, touching toes, stopping and starting immediately etc.
   v) Skilled movements. They include typing, skating, filing, juggling, playing musical instruments.
   vi) Non-discursive, communication: It includes behaviour ranging from facial expressions to highly sophisticated communications.

H) Educational Objectives: A Position Statement.
   i) The objectives should be apparent to educators and learners.
   ii) A sound educational system provides for occasional reassignment of immediate objectives to take advantage of special opportunities that occur.
   iii) Global objectives provide little guidance to teaching and evaluation and specific objectives most often ignore vast concerns.

3. CURRICULUM MODELS

A) Stake's Countenance Model
Robert Stake, an American evaluator (1969) has attempted to explain curriculum evaluation in terms of 'antecedents' 'transactions' and 'outcomes'. The terms “antecedents' implies those aspects of the situation in which the curriculum is taught, such as aspects of the time available and the books and other sources provided. The terms 'Transactions' refers to what actually happens in lessons, including, what is done by both teachers and pupils? The term ‘outcomes’ connotes pupils’ achievements which are the effect of curriculum on the attitudes of the subjects, as well as teacher's feelings about teaching the curriculum. According to stake such an approach provides an opportunity to answer questions about 'why' the curriculum was effective or not effective in various circumstances.

This model is known as Countenance Model because different people look at the curriculum and appraise it.
Stake's evaluation model may be explained as under:

<table>
<thead>
<tr>
<th>Terms</th>
<th>Kinds of Information</th>
<th>Methods</th>
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<tbody>
<tr>
<td>1. Antecedents</td>
<td>(a) Organizational background</td>
<td>Time Table</td>
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<tr>
<td></td>
<td>(b) Resources</td>
<td>Syllabus and Textbooks</td>
</tr>
<tr>
<td></td>
<td>(c) Attitudes of administrators'</td>
<td>Interviews</td>
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<td></td>
<td>(d) Parents</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(e) Examinations available</td>
<td>Interviews with staff</td>
</tr>
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<td></td>
<td>(f) Context in Curriculum</td>
<td>Planning Sessions</td>
</tr>
<tr>
<td></td>
<td>(g) Knowledge and skills of Pupils</td>
<td></td>
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<tr>
<td>2. Transactions (In lessons)</td>
<td>Teachers:</td>
<td>Activity Records</td>
</tr>
<tr>
<td></td>
<td>(a) Roles adopted</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(b) Use of time and resource</td>
<td>Observations of class</td>
</tr>
<tr>
<td></td>
<td>(c) Contact with pupils</td>
<td></td>
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<tr>
<td></td>
<td>Pupils:</td>
<td></td>
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<tr>
<td></td>
<td>(a) Cognitive processes</td>
<td>Self-report by teachers</td>
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<tr>
<td></td>
<td>(b) Interest and involvement</td>
<td>Self-report by pupils</td>
</tr>
<tr>
<td></td>
<td>(c) Use of time</td>
<td></td>
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<tr>
<td>3. Outcomes</td>
<td>(a) Pupil's achievements</td>
<td>Test and written work</td>
</tr>
<tr>
<td></td>
<td>(b) Pupil's attitudes interpretations</td>
<td>Questionnaires</td>
</tr>
<tr>
<td></td>
<td>(c) Teacher's attitudes, Interpretations</td>
<td></td>
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<td></td>
<td>(d) Effects on other parts of</td>
<td>Interviews</td>
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<td></td>
<td>Institutions</td>
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**B) Hilda Taba Model**

Taba's Social Studies Model emphasizes the cause and effect relationship in the curriculum process. Evaluation process in based on the assumption of cause and effect relationship between experimental controls over the study material audits that effects the achievement of student. A systematic-variation in the study material is also used. The researcher prepares the study material in different sets, each set having some variation from the other, Material is given to different groups of people and thereafter curriculum evaluation, is done. The outcomes of the evaluation will determine the principles for developing the new programme. The material, which produces the last results, will be advocated.

**C) Stuffiebean's CIPP Model**

Stuffiebean's (1969, 1971) contribution to curriculum evaluation is often referred to as the CIPP Model, stressing the need for attention to Context, Input (f) Process (p) and Product (p). The first three of these terms help to characteristics formative evaluation, while product refers to summative evaluation. All the four elements of CIPP model are necessary backgrounds for the processing of delineating, obtaining and providing useful information for judging decision alternatives. The CIPP attempts to answer the following Basic questions:

i) What objectives of evaluation should be accomplished?
What procedures should be followed?
Whether procedures are working properly?
Whether objectives are being achieved?

Four types of decisions are possible: decision on intended means (precedence designs), intended ends (goals), and actual means (procedures), actual ends (attainments).

**D) Michael Seriven's Goal Free Model**
Michael Seriven (1973) has argued that the evaluator should not look at only what is intended by the course developers since some of the important effects, pleasant or otherwise may come quite unplanned. In this model, no goals for achievement are set. It is primarily concerned with the actual effects of a programme. The checklist used in this model does not prescribe the minimum levels to be achieved by a programme. In this type of evaluation, teachers have only a limited role to play as simply they have to make the curriculum programme available for evaluation.

**E) Tyler's Objectives Model Devaluation**
R. Tyler propounded the objectives Model of Evaluation in ‘Basic’ Principles of Curriculum (1949). He visualized curriculum evaluation as the process of determining to what extent the programme of instruction is actually realizing the educational objectives. Curriculum evaluation is a means for quality control in education.

In the objectives model of curriculum, curriculum is assessed against a set of specified objectives. The model got a concrete shape through the work of B.S. Bloom who produced a classification system of objectives that covered that area of pupil-learning. He put forward his ideas in Taxonomy of educational Objectives: The classification of educational Goals. (1956).

Tyler's model involves the following steps:

i) Formulating objectives.
ii) Classifying the objectives.
iv) Defining the objectives in terms of behavior.
v) Selecting situations in which achievement of objectives will be shown.
vi) Selecting and trying promising methods of evaluation.
vii) Developing more improved and objective methods of evaluation.
viii) Developing means of interpreting and using the results of various instruments.

Tyler's model emphasizes instructional objectives. Important elements of this model are the specification of objectives and evaluation of student achievement in terms of these objectives. This model is likely to ignore the process of instruction. Taba's Social studies Model stresses the cause and effect relationship in the curriculum process. The key elements of this model are experimental control and systematic variation of the material to study. The curriculum, which gives better results, is advocated.
F) Ritz Model

A Model to Take Theory into Practice
Curriculum development is one of the key factors related to meaningful and successful program improvement. If one were to examine the curriculum development procedure, a number of recurring structural elements would be identified that are useful in the construction of a curriculum for any subject area. This review will be devoted to an identification and explanation of these elements. It is pursued to offer educators and trainers additional tools that may be used in the educational process. Besides this point, if educators are familiar with the logic and rationale accompanying the curriculum development process, they should be better equipped to defend and implement any program in their subject/training area.

Analysis of reports and texts in the curriculum area reveal that many proposals have been suggested for models or steps to be taken in educational program development. Those that had the greatest influence on the author have been presented by Tabu (1962) and Zais (1976). Both writers have developed systematic procedures for the development of curriculum. Their models are based on the establishment of foundations, content, and evaluation procedures. These are illustrated in Table 1.

Many of those who study the components of curriculum are in agreement with the selection and need for these elements in the development of programs or courses. However, for any model to be useful to educators or trainers, detailed explanations are essential so those who wish to employ these elements in the development process can fully take advantage of them.

With this in mind, the author has analyzed the models of Tabu, Zais, and others to determine those structural components most useful in curriculum development. To this list other elements have been added that have proven useful in structuring a resourceful curriculum document. The resultant curriculum development model appears in Table 2. The remainder of this analysis will explain each of the structural elements cited in Table 2 and how they may be employed in the development of a technical course or program. The major headings cited in Table 2 have been identified as curriculum foundations, curriculum content, and curriculum evaluation. Each of these categories and their anatomy will be reviewed to exemplify their use in curriculum development.

Curriculum Foundations
Curriculum foundations are the components that influence and control the content and organization of the curriculum (Zais, 1976). They are based upon values one has developed pertaining to knowledge, society, learning, and the individual. Foundations tend to influence the philosophies of those who are developing the curriculum, and these philosophies are, in turn, reflected in the curriculum. Such components as:
1) definition of the program area,
2) rationale for the study of the program area,
3) content source,
content structure,
5) program aim, and
6) program goals are included in the curriculum foundations.

As implied in the above discussion, curriculum foundations are used to establish a basis for further undertakings in curriculum development. At this point, each of the elements found within the curriculum foundations will be explained. The definition of the program area shall be the first element reviewed.

A precise definition of the program area under analysis can be useful to those involved in curriculum development. By establishing a definition of the program area, one is laying out the boundaries for the curriculum development process. In this way, both the developers and users of the curriculum will know exactly what knowledge or content is to be analyzed and conveyed. In the case of production technology (an area where the author has developed curriculum), a broad definition that has been offered for describing this subject is:

The application of knowledge and technical systems that convert resources into structures or industrial or consumer goods (Hadley & Ritz, 1991, p. 23)

Others have provided definitions for this program area that also could be used.

With knowledge of the definition of the program area, the reader is ready to pursue the second element of the foundations. This is a rationale for the study of the program area. Information inter-relating the areas of knowledge, society, learning, and the individual can be used in this element to emphasize the need to study the program in schools or the work environment. Instances used to support the study of production technology include:

- Integrating technology and daily life.
- Gaining an understanding of production systems.
- Using tools, materials and processes.
- Developing problem solving skills.
- Learning social/cultural impacts of technology.
- Practicing industrial safety.
- Practicing personal and business management skills.
- Building human relations skills.
- Practicing entrepreneurship skills.
- Discovering employment and post-secondary training needs.
- Developing leadership skills (Hadley & Ritz, 1991, p. 14).

With a definition of the program area and a rationale for its study, one should know the "what and why" of the content being shaped into a curriculum. With this information, the next step is to examine the source of the curricular content or knowledge base.

The content source is the third element that assists in establishing a foundation for the curriculum development process. It is the knowledge base where the curriculum content
is derived for use in program development. In simpler terms, a content base is a bank or reservoir of knowledge where information (knowledge) is obtained for structuring a program. Depending upon whom is developing the program, and for what purpose it is being designed, i.e., work, leisure, general information, various content sources can be used.

A number of these include employment, job cluster training, general literacy, specific technologies, or technological areas. If one were to develop a curriculum on computing, these differing content sources would drastically change the shape of the curriculum. A computer course for general literacy would be much different than one to train network engineers or program designers. The source one selects to design a curriculum shapes its intent, or aim, and is often dictated by ones philosophy, understanding of the knowledge base, knowing the needs of society, and realizing how and why learners learn.

With an understanding of the content source, the next step in the curriculum foundations is to establish a content structure. It is the fourth element used in establishing a foundation for the curricular program. The content structure is employed to display graphically how the information being derived from the content source might be arranged for program and curricular unit development purposes. An example of a content structure for a production technology course appears in Figure 1. As can be observed, the content structure illustrates how the content for the program might be structured for program development purposes.

The program aim is the fifth element of the foundations portion of a curriculum development structure. This element describes the expected outcome of having students/learners study the content prescribed in the curriculum. For a production technology education program this outcome might be "to acquaint learners with the processes and systems used to produce our industrial and consumer products" (Hadley & Ritz, 1991, p., 5).

The final curriculum development element useful in establishing the foundations for a program or curriculum is the program goals. Goals are long range program outcomes that reflect the directions in which the curriculum should work. Examples of goals for production technology include:

- Learn how production systems originate.
- Describe how production systems influence people and societies.
- Discover how industry processes resources into products using processing, construction, and manufacturing systems.
- Use management systems to support the operation of production systems.
- Investigate technical developments in production technology systems which will probably change our products in the future.
- Analyze career options in the technologies of production systems.

As represented through this listing, goals are more specific than aims, but they still do not provide any means for direct student attainment of knowledge.
The above discussion has provided some insight into the development and utilization of foundations for curriculum development. Incorporation of these structural elements into the curriculum development process provides a means for expressing a philosophical view based on knowledge, society, learning, and the individual. Thus a strong foundation can be established for further undertakings in the curriculum development arena.

**Curriculum Content**

Curriculum content is the second major category of curricular elements. It includes the knowledge, skills, and attitudes (values) which educators are interested in conveying to learners. As the foundations of the curriculum determine what and why to teach, the content focuses upon the specific information to be transmitted and the means of transmission. In this category are the scope, sequence and unit specifications. The unit specifications may be further divided into goals, rationales, objectives, activities, and references. In all, the content elements provide direction for organizing curriculum content and for transmitting it to learners. At this point, each of the elements found within the curriculum content category will be discussed.

Scope and sequence are vital elements in structuring any curriculum in the education/training program. These elements establish content guidelines for the curriculum development and implementation processes. The use of a scope and sequence provides an effective format for organizing learning experiences for both curriculum developers and implementers.

The term scope encompasses the magnitude of content and objectives within a curriculum (Beauchamp, 1975, p. 198). More specifically, it is the breadth of knowledge to be covered within the curriculum or a particular subject area. As an example, in the production technology program, the scope of the curriculum might include production technology and its impact on societies, the production technology cycle, processing technology systems, manufacturing technology systems, construction technology systems, and future implications of production technology. From this example, one can see that the scope includes the breadth or magnitude of content that the program wishes to transfer into learning experiences.

Sequence is usually associated with scope. However, its meaning does differ. Sequence is the ordinal structuring of the content found within a curriculum (Beauchamp, 1975, p. 198). More simply stated, it is the order in which scope or content and objectives will be arranged for instructional purposes. In production technology, the sequence for a unit on the production technology cycle might include material resources, resource extraction, transforming materials, the production process, marketing, the service industry, and resource recovery. In curriculum development, the scope would list all the content areas to be taught, while the sequence would provide the ordering of this content in a coherent fashion.

To further assist in the development of curriculum and instructional plans, unit specifications are needed. Unit specifications are those rudiments which are helpful in the
actual developing and structuring of a unit of study. The sub-components of unit specifications are unit goal(s), unit rationale, unit objectives or competencies, unit activities, and references. These curricular components will be reviewed next.

Unit goals are the overall outcomes which instruction within the unit should be directed. Examples of unit goals, for a production technology unit on marketing, could include:

- Describe the concept of market analysis.
- Organize marketing activities.

As can be gathered from this example, unit goals are broad in nature, but they attempt to show what the purpose and instructional focus of the units are.

The next unit specification component to be discussed is the unit rationale. It is an element which supports the unit goal(s) and explains the "what and why" of the unit. The unit rationale should provide the reasons for providing such a unit of instruction for learners. These descriptions should be short but meaningful narratives and provide specific reasons why study in such units are vital to the learner's total education.

A third curricular component under the heading of unit specifications is unit objectives or competencies. While aims and goals are broad and somewhat removed from the learning situation, objectives or competencies are measures of specific learning outcomes. They are essential targets and can be measured through classroom activities and evaluations. Examples of unit objectives are illustrated for a unit on resource extraction for a course in production technology:

- Describe how material resources were gathered during our early history.
- Explain how resources are extracted from our environment today.
- Differentiate between mining and harvesting.
- Construct models of resource extraction devices.
- Experiment with the production of materials through biotechnological means.

As illustrated through these examples, objectives or competencies are specific targets for instruction within the education or training program. They prescribe perimeters within which instruction should evolve, and they can be used to evaluate whether learners can achieve these targets.

Unit activities are the fourth set of components found under the element of unit specifications. These elements, as stated by Zais, "represent the heart of the curriculum because they are so influential in shaping the learner's experiences and thus [his/her] education (1976, p. 350). Unit or learning activities are those parts of the curriculum where learners become involved. They are the reading, listening, manipulating, writing, experimenting, and other learning processes that provide learners with experiences in the content of the curriculum. It is through these various learning activities that the content of the curriculum is transmitted to the learners. Activities are what involve the learners in the curriculum. Through these various experiences, the process of learning actually takes place.

The final component of unit specifications is references. These are the books, videos, periodicals, and other resource materials that are helpful in developing instructional plans.
to implement the educational program. Many who have proposed models for curriculum development have not included this element, but it is felt by this author that references are a vital component for those who are faced with implementing the curriculum. For this reason, it has been listed under the unit specifications element.

In this review three major elements have been included in the curriculum content section of this model. These have been labeled the scope, sequence and unit specifications. After one attempts to transmit the content of the curriculum to the learner using these elements, a final category of curriculum development comes into use, i.e., the evaluation elements useful to curriculum development.

**Curriculum Evaluation**

The final broad category of curriculum elements is evaluation. It exists for two primary purposes. First, it attempts to measure whether the learners are achieving the content objectives set forth in the curriculum, and second, whether the curriculum is doing what it is supposed to do, content validity. Therefore, the evaluation category of a curriculum should be divided into student evaluation and document validation elements.

The student evaluation element is concerned with unit objectives and unit activities. Through student performances and assessment through testing, learners are measured to determine if they can competently achieve those standards prescribed in the unit objectives. In addition to this means of evaluation, there exists an area known as document validation. This type of evaluation determines whether there is a correspondence between the ideas set forth in the foundations section and the information transmitted through the content section of the curriculum. All too often, curriculum documents describe one set of intentions and offer a different set of content and outcomes. Consequently, the curriculum document is not fulfilling its intended purpose. The document validation is intended to insure the curriculum foundations and content are directed toward the same outcomes.

In the above discussions, a number of useful curriculum development elements have been cited and illustrated. These elements have been organized into three categories. These included curriculum foundations, content, and evaluation. If these elements are used in the development of a curriculum or program, a more meaningful and understandable curriculum should result. This occurs because those who are developing the curriculum must identify and structure their ideas following a logical sequence. This allows for more directed dialogue and research by those undertaking the curriculum development. When these steps are used in the curriculum development process, a number of effective instructional programs and units of instruction should result.

4. **CURRICULUM EVALUATION PROCESS**

An evaluation study requires a lot of thinking as well as proper planning to get useful results. Generally, most attention has been placed on the evaluation of the content, the basis on which the curriculum development was approached. Recent trends towards more process concept of
behavioural based programmes demand more adequate definition of evaluation, better related criteria for judging value and more sophisticated mechanisms for organising the procedures and made is for reporting. Every evaluation study, has peculiarities of its own but the design of the study has to be planned using relational procedures. Various strategies and models for designing evaluation studies have been tried and a summary statement of the procedures involved in some of them will now be attempted.

In organizing a curriculum evaluation, logically and intelligently, leading to decisions on the effectiveness of the programme and its possible improvement, one suggested strategy involves the following:

a) Specification, refinement, or modification of programme goals and evaluation.
b) Planning for an approximate evaluation design.
c) Selection or development of data-gathering methods.
d) Collection of relevant data.
e) Processing, summarizing and analysis of data.
f) Contrasting of data and objectives.
g) Reporting and feedback of results.

4.1 Steps in the Evaluation Process
The evaluation process should include the following steps.

i) The involvement of all concerned in the study as facilitators of programme evaluation, such as:
   a) Related groups, boards, parents,
   b) Professional individuals, psychologists, teachers,
   c) Student groups.

ii) The formation of a cohesive model of broad goals and specific behavioural objectives, arranged in hierarchical order from general specific outcomes in respect of all the three domains of objectives.

iii) The translation of specific objectives into a communicable form, applicable to facilitating learning; and the application of instructional strategies with content and process components.

iv) The choice of instrumentation (test, observations, interviews, etc.) which will allow one to make inference about programme effectiveness.

v) Periodic observation of behaviours as valid and reliable indices.

vi) The analysis of data, given by measurers, by typical statistical methods.

vii) The interpretation of data relevant to specific objectiveness of me programme and instructional strategies.

viii) Recommendations culminating in further modifications and revisions of broad goals and specific objectives to produce, substantial improvements in the programme.

5. METHODS OF CURRICULUM EVALUATION

Some of the methods used to determine the effectiveness of an educational programme are outlined below:
i) The cosmetic method: It deals with the apparent activities and face value of the programme. Evidence about students learning is not collected.

ii) The cardiac method: It involves an empirical approach. The effectiveness of the programme is shown through the collection of data.

iii) The colloquial method recommends the discussion of the finding on the programmes effectiveness by a group of people associated with it.

iv) The curricular method: It attempts to show how the new programme could fit into the old one for improvement.

v) The computational method: It uses the statistical analysis of the data on performance in the programme

It may be mentioned here that each of the above cited methods, has got its own minus and plus points. It is not, therefore, advisable to recommend or adopt exclusively any one method at the cost of others for all situations and purposes. It should, therefore, mainly depend upon the relevant crucial factors, which should help in determining the method of evaluation to be adopted.

5.1 Problems of Research Design in Curriculum Evaluation

Research projects on the effectiveness of the curriculum are carried on, generally, using a comparison between experimental and control groups. In the experimental group, the curriculum variable interacts with many other elements in the teaching process the methods of instruction; the training and indoctrination of teachers etc. A Control group is a group of subjects (the students being included for the evaluation design) as similar as possible to the experimental group, the difference being “that they are not given the experimental treatment. A statistical comparison is then made between the achievements of the two groups to discover whether there is any significant difference between them.

As alternative to such an experimental approach to curriculum evaluation the following may be suggested:

a) An attempt might be made to isolate characteristics of a curriculum to vary them independently. For example, teachers attitudes vary and are not under control material might be used with teacher training.

b) Statistics could be used to suggest the process of learning as related to curriculum elements. The investigation could look for trends, ups-and-downs.

c) Clinical studies can be done on developmental psychology problems.

d) The curriculum variable could be redefined at the point of its effect, the interaction between the teachers and students. Observations of the process and interviews could be recorded for an assessment of teachers’ attitudes.

Comparison of parallel experimental and control groups may not be meaningful as this approach assumes that all the relevant variables (except the curriculum variable) have been constant. But in such complex situations, this may be difficult to achieve. Instead of taking the groups simultaneously, evaluation using longitudinal studies would consider the curriculum as a process, a succession of events changing systematically over time.
In evaluation, behavioural definitions of the objectives are demanded from the course designers. Evaluators tend to equate behavior with items in the cognitive process; however, achievement tests may be sufficient to assess the objectives of the curriculum. The study of such typical performance variables as attitudes, learning and teaching styles etc, or the development of instruments for measuring such variables are among the major technical problems of evaluation, studies. Also the new curricula are subject oriented and the evaluators”

The subject specialists often reject behaviour concept. However, the relation between the subject disciplines and the process of teaching has to be examined: and all those concerned with education should contribute not only to the improvement of a particular subject in particular circumstances but also the understanding of the process of teaching and learning.

The purpose of evaluation is to determine the success or failure of any program achieving its objectives. In attempting to evaluate a programme a record has to be maintained for investigation regarding:

i) The objectives of the programme
ii) The environment provided
iii) The transactions between the teachers and students
iv) The students’ progress
v) The side-effects of other variables
vi) The merits and shortcomings seen from divergent viewpoints.

Depending on the interests/intents of evaluators in the concerned field, and considering the entity, standards and, anticipated decisions, some major antecedent variables, transactions between teachers and students and outcomes are listed below:

i) Antecedents
   • Student characteristics
   • Teacher characteristics
   • Curricular content
   • Curricular context
   • Instructional materials
   • Physical plant
   • School organization
   • Community context

ii) Transactions
   • Communication flow
   • Time allocation
   • Sequence of events
   • Reinforcement schedule
   • Social climate
iii) Outcomes
   - Student achievement
   - Student attitudes
   - Student motor skills
   - Effect on teachers
   - Institutional effects

Such a description as given above helps to identify the many characteristics programme to be evaluated. The evaluator must choose the variables to be described and judged according to his interest and talent. As for the sources of information they may be described as teachers, administrators, parents and so on. The evaluator has to choose the relevant variables by using:
  i) Intents
  ii) Observations
  iii) Standards
  iv) Judgments

To be more specific:
  i) The intents are indicated by the different goals of the people involved
  ii) The observations refer to the perceptions of what actually happens during the implementation of the programme.
  iii) The standards depend upon the opinions of experts as to what should happen.
  iv) The judgments reflect the feelings of the people about aspects of the situation.

6. PROCEDURES OF CURRICULUM REVISION

Standard Operating Procedure (SOP) for Curriculum Revision in Pakistan

The curriculum with varying definitions is said to be a set of learning which comprises course contents, evaluation, pattern of examination/assessment, teaching methodologies. It can further be elaborated as it incorporates the development of existing syllabi, changing its contents giving guidelines to develop students out-look, raising their competency to meet the requirements of the changing world. The world has turned into a global village where new ideas and information are pouring in a constant stream. To keep our students abreast with the global changes and the research carried out in the field, there is a need to constantly review/revise the curricula offered in universities/ degree awarding institutions. The Higher Education Commission (HEC) is continually performing curriculum revision in collaboration with universities and other stake holders. According to the decision of the special meeting of Vice-Chancellor’s Committee, the curriculum of a subject is set to be reviewed after every 3-4 years. Curriculum Development/Revision is an organized and systematic process. It involves a number of steps which needs to be considered during curriculum development process by the stake holders. (Curriculum Division)
• **Step-I Constitution of National Curriculum Revision Committee (NCRC)**
  This step starts with the identification of subjects which curricula needs to be revised during the year. The Vice-Chancellors of all public and private sector universities, R & D organizations, councils, colleges and industries are asked to nominate their representative for the discipline under consideration for the constitution of National Curriculum Revision Committee (NCRC). In the selection of participants from the number of nominations received, following parameters are observed:

  **Selection from Academia:**
  - Region-wise participation of all public sector universities offering particular subject (Max 02 and Min 01 member from each university)
  - If present, relevant Club-wise participation must be insured
  - Participation from institutes located in remote/far flung areas (Max 02 and Min 01 member from each university)
  - Participation from well reputed private sector institutions (Max 02 and Min 01 member from each university)
  - The faculty member should have at-least 05 years of experience to become a NCRC member
  - Having maximum higher degree of qualification, (research in the relevant field should be given priority)
  - Must be from relevant area of studies, and should have particular subject as an area of specialization.
  - The participation of Secretary of previous NCRC must be insured
  - A blended group of NCRC members is suggested to be formulating with lots of experience and fresh educational degrees so that maximum range of discussion can be made possible. (Note: - Participation of both the gender may be ensured where nominations are available)

**Selection from Professional Accreditation Councils**
One member from relevant accreditation council may be selected where applicable. The nominee should have at least 10 years of practical experience in the relevant field.

**Selection from Job Market (Industry)**
Two members form Job Market through stock exchange’s list of major companies keeping in view the subject demand. The nominee should have at least 10 years of practical experience in the relevant field with appropriate educational background.

**Selection from R & D Organization**
One senior member from research and development organization, preferable having a PhD in the relevant field with at-least 05 years of experience, where applicable.

**Selection from Civil Society and Alumni**
One member either from civil society or from alumni (eminent personalities, non-academician intellects, newspaper editors, politicians etc.)
• **Step-II Assessment / Analysis of the existing Curriculum**
The existing curricula under consideration (from foreign / local universities) are circulated among the members of NCRC through email and in hard form to discuss it with their colleagues and bring collective proposals for review and revision in relation to:
   a) Objectives (of teaching the subject)
   b) Scheme of studies i.e. total credit hours, duration, list of courses
   c) Course content
   d) Reading materials
   e) Recommendations for effective implementation of curriculum

• **Step-III NCRC meeting-I: Draft Preparation:**
After selection of NCRC Members from the nominations received from various stakeholders, the first/preliminary meeting of the NCRC is organized at the HEC Headquarter, Islamabad or at one of its Regional Centers Karachi, Lahore, Quetta and Peshawar, to ensure maximum local input in the exercise of revising a curriculum. Other universities at different places are also invited for the purpose. The meeting lasts for three consecutive days involving detailed discussion and deliberation keeping in view the previous/existing curricula of the subject, latest advancement in the discipline such as available research and curricula taught in the advance countries and local needs of the market and job industry. This three days effort of NCRC members results in preparation of a Preliminary draft of the curriculum under revision. This draft is then discussed by the NCRC members with other faculty members in their universities/DAIs, suggestions and input is gathered to be discussed in the Final meeting.

• **Step-IV Appraisal of the Preliminary Draft:**
The preliminary draft prepared is circulated by the Convener among the members of NCRC to discuss the same with their colleagues and board of studies for their input to suggest further improvement. The views / recommendations collected are discussed in the final NCRC meeting. In this way maximum number of expert in the field are involved in this exercise. During the interval period of time between first and 2nd (final) meetings, the members of NCRC discuss the preliminary draft curricula through e-mail and exchange the suggestions for improvement of the draft. The coordinator of the meeting from HEC actively participates in all this exercise that is carried out before the final meeting.

• **Step-V NCRC meeting-II: Finalization of Draft**
The second / final meeting of the NCRC is usually held after 3-4 months. The committee finalizes the draft in the light of comments / suggestions / recommendations received from the NCRC members, university / degree awarding Institutions. The second (final) NCRC meeting is also conducted for 3 days. Most of the steps done for preliminary are repeated for this final meeting.

**Special Meeting/ Sub-Committee Meeting**
Often after both NCRC meetings (Preliminary and Final), if there is some leftover work which needs to be finalized, for the purpose and on the request of Convener of NCRC, a
special meeting of selected members (sub-committee) or full NCRC is convened to complete the task. HEC organizes such meetings on special request of the Convener, keeping in view the sensitivity of work/agenda of the meeting, subject to the approval of Competent Authority.

- **Step-VI Implementation & Monitoring**
  The curricula designed are printed and circulated to the universities / degree awarding institutions for its adoption / implementation after the approval of the competent authority. Final curricula are also placed on HEC website. The universities / institutions are requested to submit report on the implementation of the curricula. The implementation process is monitored by the Curriculum section with the help of Accreditation body, if available.

7. **REVISION OF CURRICULUM FOR SECONDARY CLASSES IN PAKISTAN**

Curriculum must change in order to prepare young students to cope with the challenges of economic demands and technological changes. Nations keep on revising the school curricula with a view to meet the global market trends and technological advancements of 21st century. In 2006, Pakistan also started a major revision process to bring its national curricula in line with a competency-based model rather than an objectives-based model. Curricula for 23 core compulsory subjects were notified as first batch in 2006-07 with implementation to start in 2008. Between 2006 and 2010 curricula of 61 core/compulsory and elective subjects were revised. At the same time in 2007 new ‘Textbook and Learning Material Policy and Plan of Action’ was introduced to produce quality textbooks through a competitive process between private sector publishers. The Curriculum Implementation Framework is a broad policy guideline regarding development of learning materials, professional development of teachers/instructional delivery system, assessment and testing of students' achievements/learning outcomes and feedback for changes required for effective future revision of curriculum.

The revised National Curriculum 2006 - 07 is a student-centered, standards based curriculum with detailed learning outcomes directed to meet the standards. It emphasizes understanding and application and not just content coverage, in order to make education personally relevant to the lives of students and to inculcate lifelong learning.

The approach of the revised curriculum is in line with the international standards and has been made comprehensive by incorporating content strands/competencies, standards, benchmarks and students' learning outcomes. Development of attitudes and values towards various subjects is also included and not just transfer of knowledge.

The curriculum provides a comprehensive outline for the teaching of each subject and developing teaching learning resources (textbook, teachers' guide, and workbook) and encourages the use of related educational technologies.
Students' assessment and evaluation strategies are also outlined in the curriculum which go beyond rote memorization and allow students to demonstrate proficiency in a variety of ways. The curriculum provides detailed guidelines for quality assessments, which would:

- Measure what students know and are able to do;
- Align with learning goals and the mode of instruction;
- Stress application of what students know and are able to do in new or different situations.

The revised curriculum intends to make learners creative, constructive, communicative and reflective individuals who are disciplined, productive, moderate and enlightened citizens capable of effectively participating in the highly competitive globalized, knowledge-based economy.

The revised curriculum lays a strong emphasis on values for peaceful co-existence, unity in diversity, and development of positive attitudes towards fellow human beings through respect and tolerance.

The curriculum is activity based and essentially focuses on activities through cooperative learning where children in schools are encouraged to work together in groups and pairs to solve problems and carry out activities to foster learning and sharing. (School Education Department, 2014)

### 7.1 Process of Curriculum Revision

The process of revision of national curriculum includes

- Comparison of existing curriculum with curricula of different countries
- Consultation with the teachers, educationists, curriculum experts, administrations, students, field visits to collect feedbacks from teachers and other stakeholders,
- Identification of areas of training of working teams through workshops, review of drafts by subject experts and working teachers leading to further revision and refinement of contents preparation of a uniform curriculum format consisting of standards, benchmarks and learning outcomes, including suggestions for developing teaching-learning material, teaching strategies and methodology, assessment pattern and professional training of teachers.

### 7.2 Approach of the Curriculum

The main focus is on learning outcomes rather than the contents. More space is provided for developing the capacity for self-directed learning, the spirit of inquiry, critical thinking and teamwork, whereas local contextual material including environment, and health education are also focused on as integral part of early education.

The existing national curriculum was reviewed, updated and revised with a view to:
• Equipping the students with skills needed in real life
• Providing triggers within curricula for inquiry and analytical thinking as well as inculcating life skills and values.
• Discouraging passive learning to infuse in students the habit of learning by doing and with understanding.

Student Learning Outcomes (SLOs) are essentially the essence of the revised curriculum 2006. It is based on a globally accepted and effective format, which consists of standards, benchmarks and SLOs. For each subject document, horizontal and vertical articulation has been maintained. Vertical overlapping within the discipline and horizontal overlapping with other disciplines (subjects) has been avoided to make room to include emerging trends, new developments and such applications and concepts that are useful in real life situations for making the subject learning more relevant, meaningful and stimulating. Inquiry approaches and interaction with peers as well as with teachers are emphasized. Science, technology and society connections have been earmarked. Instructions and guidelines are given to develop assessments based on understanding, thinking abilities and process skills.

**Content**
The syllabus is designed to emphasize less on purely factual material, whilst putting much greater emphasis on the understanding and application of concepts and principles. This approach is adopted in recognition of the need for students to develop skills in investigations/field work/field survey/report writing/research and analysis that will be of greater long term value in an increasingly technological world.
The syllabus is based on the format of standards and benchmarks for each level as defined in the National Curriculum framework. In order to specify the syllabus as precisely as possible and also to emphasize the importance of higher order abilities and Investigative skills/library/field work other than recall, learning outcomes have been used throughout.

Standards: they define the competencies by descriptive statements specifying broadly, the knowledge, skills and attitudes that students will acquire in each subject, know and be able to do in a particular key area during the course of study. These are qualitative in nature and set out the learning targets.

Benchmarks: they elaborate the standards indicating that the students will accomplish at the end of each development level. They are also subject specific.

SLOs: they are detailed statements describing what students are supposed to learn and be able to do at each grade level for each subject to achieve the specified benchmarks. They are activity specific and generally observable and measurable. The intended level and scope of treatment of content is defined by the stated learning outcomes within easily recognizable domain of
i) Remembering
ii) Understanding
iii) Applying
iv) Analyzing
v) Evaluating
vi) Creating

The relevance and significance of concepts to students’ everyday life and to the natural and manmade world is given wherever applicable. The standards and the accompanying benchmarks assist in the understanding of syllabus, foster diversity in establishing high quality learning outcomes, and provide an accountability tool to individuals involved in the evaluation process. These provide a common denominator to determine how well students are performing. They will ensure that all students are measured on the same knowledge and skills using the same method of assessment.

<table>
<thead>
<tr>
<th>Traditional approaches</th>
<th>Standard based approaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Based on contents &amp; topics</td>
<td>• Based on standards</td>
</tr>
<tr>
<td>• Focus on objectives</td>
<td>• Focus on SLOs</td>
</tr>
<tr>
<td>• Focus on teaching</td>
<td>• Focus on learning</td>
</tr>
<tr>
<td>• Teacher centered</td>
<td>• Student centered</td>
</tr>
<tr>
<td>• Reading, writing, speaking and using arithmetic (skills)</td>
<td>• Interpersonal, communication, teamwork, and problem solving skills</td>
</tr>
<tr>
<td>• One way approach</td>
<td>• Variety of approaches</td>
</tr>
<tr>
<td>• Assessment of content knowledge &amp; simple understanding</td>
<td>• Assessment of content skills, deeper understanding, reasoning and application</td>
</tr>
<tr>
<td>• Promote memorization</td>
<td>• Promote thinking</td>
</tr>
</tbody>
</table>

Learning in a standards based approach is considered as the active construction of knowledge by learning through an engagement of the learner in a social or personal experience and not as the transfer of knowledge from teacher to learner.

### 7.3 Proposed Curriculum Implementation Framework for Punjab

Curriculum implementation is a complex process which requires coordinated efforts of various organizations with multiple jurisdictions. Curriculum implementation is primarily the job of the Provincial Education Departments (PED). Through their networks of provincial and district level educational institutes/departments, the PEDs provide textual material, teacher training and guidelines and where necessary upgrade existing teaching facilities. For example, many a time, changes in science curricula require new equipment and modifications to be carried out in the laboratories.

Learning materials are one of the most important components of the educational process. Results of most of the educational analysis provide evidence about the importance of learning materials in the process of building up educational quality through improving the
quality of textbooks. In spite of the fact that revolutionary changes have occurred in instructional technology, textbooks still occupy the central place in the delivery of curriculum in schools.

Teacher quality is also recognized as the greatest determinant of educational success. Quality teaching has a measurable impact on student outcomes. Successful teaching requires a deep understanding of the subject matter, use of appropriate instructional methods, and application of various classroom assessment strategies. For this purpose fundamental changes are required both in pre-service and in-service teacher education curricula and training systems.

In Pakistan most teachers - specifically those in public service - depend only on textbooks. They just prepare the students for success in the examination and not success in life. Teachers who are good at subject knowledge and take interest in learning research-based instructional skills surely play a key role in student development and achievement of learning outcomes. For successful implementation of any curriculum it is pertinent to bring attitudinal changes in the teachers on one hand and to equip them with new classroom delivery techniques with maximum participation of the students on the other. Activity and programme - based learning need to be encouraged keeping in view the developmental level of the learners.

Student assessment is another important component of the overall educational process. Good assessment involves evaluating student progress and measuring the degree to which a student has achieved desired educational outcomes. Methods for assessment must also be developed to guide students throughout the instructional process and to determine how well each student achieves the desired outcomes. Examination systems need to align their methods to the requirements of the new curriculum. The examination system in Pakistan tends to reinforce the system of rote memorization through its continued trend in asking textbook based questions that students can simply reproduce if they have successfully memorized their books. Very little emphasis is given to testing understanding, application and higher order thinking. Since the entire education system is heavily geared towards success in examinations as teachers inevitably start following teaching techniques that foster memorization. A major overhaul is required in this field in order to ensure that student learning outcomes, as laid down in the curriculum, are achieved and tested as desired.

Lastly placement of feedback mechanisms within the education systems is one of the important elements of an implementation framework. Through an effective and properly placed feedback mechanism we can find the deficiencies in the curriculum, learning materials, classroom teachings and assessment / examination systems. At present neither the curriculum bureaus nor the examination boards are performing this activity, hence the curriculum revision is not based on any empirical data but rather on raw speculations or political decisions. Therefore, feedback mechanisms are included as an integral part of the Curriculum Implementation Framework.
After detailed consultations in several national workshops representing all stakeholders the following steps are proposed to facilitate implementation of curriculum:

- Dissemination
- Development of Textual Material
- Teacher Training
- Examination/Assessment and Evaluation
- Feedback

1. **Dissemination**

   Curriculum dissemination can be defined fairly and broadly as the process of informing developers of textual materials/textbooks, the teachers and teacher trainers, the assessment and evaluation experts and educational administrators and other stakeholders including civil society. Documents or materials and information about new or revised curriculum is to be transmitted to all concerned as soon as it is approved and notified, so that they understand and accept the innovation and make necessary preparations for the implementation of the new curriculum.

   A series of actions is set into motion with formal adoption of the curriculum. The foremost task is communication of the change to provincial/area government who bear the responsibility for bringing the change at the level of schools and examination boards. The education authorities develop plans to bring about the change in the schools under their supervision. This may involve changes in timetable, instructions to teachers to rearrange course schedules and provision of new books.

   Dissemination needs to move beyond the traditional approach of posting the curriculum documents to relevant institutions and hoping for change. It needs to focus more on building understanding of the new approaches and informing the public at large on the importance and relevance of the proposed change. The process of dissemination should encompass creation of ownership and support for the reform by spreading the message to as large a group of stakeholders as is necessary.

   Following are the proposed sub-steps to disseminate the new / revised curriculum to the concerned stakeholders for implementation:

   - Prepare and notify the implementation schedule
   - Display curriculum documents on national/provincial education department's/ministry's website
   - Inform all stakeholders including parents and general public about the new curriculum through media
   - Distribute hard copies of subject curricula to all relevant stakeholders
   - Organize meetings, seminars/ workshops for all stakeholders for curriculum orientation
2. Development of Textual Material
Curriculum implementation largely relies on development of new textbooks and supplementary material. Textbooks are arguably the mainstay of classroom teaching. They contain up to date, well laid out, concise, easy to understand and relevant narrations on the subject. Content is one feature of a textbook that concerns curriculum development. Its language, graphics, style, methodology, quality of printing, cost and size also matter. Textual material development attends to all these matters. In addition to textbooks, related support material is necessary to assist learners and teachers in the learning process. It may be in the form of workbooks, teacher guides and other learning materials. All are important components of resource materials that classroom teaching and learning depend on.

3. Textbook Reform in Pakistan
In 2007 a 'National Textbook and Learning Materials Policy and Plan of Action' document was notified in order to introduce a well regulated system of competitive publishing in Pakistan with the objective of 'improvement in the quality of education at all levels through better quality textbooks at affordable prices'.

The main difference in the old and new approach is that the development of textbooks is no longer done by the textbook boards but by private sector publishers. Only in case the private sector publishers are not coming forward for certain titles, the textbook boards will develop according to their existing procedures so that all the required books are available.

Under the new system the textbook boards play the very vital role of regulation, facilitation and monitoring of the textbook development process in their province. They invite publishers through an advertisement in the newspaper for the number of titles required for particular grades. The publishers respond to this advertisement and under a mutually agreed upon schedule develop the manuscripts. Subsequently, the textbook boards review and provide feedback to publishers for improving the materials.

The textbook boards by virtue of their years of experience in this field also facilitate the development of textbooks by publishers by providing transfer of knowhow through direct contact and training programmes for the publishers.

The new policy recognizes that materials other than textbooks have a role to play in the enhancement of learning and proposes a method whereby publishers can get their supplementary and support materials certified by the board.

According to a clause in the policy provincial governments will increase expenditure on materials other than textbooks, like supplementary and other support materials thus recognizing and reinforcing at policy level the commitment to expanding the horizon of school learning materials beyond textbooks.

Printing modalities are left to the provinces to work out under mutual agreement with the
publishers and the textbook board.

Under the current practice all external examinations are based on textbook content and even the examples of the textbooks are used in the question paper. According to the new policy because there will be multiple textbooks available for the same subject, examinations will be based on the curriculum concepts instead of any particular textbook. This will ensure that conceptual understanding is being tested thereby discouraging rote memorization.

How can we increase the effectiveness of our textbooks is one of the questions that need to be answered to enhance the quality of our education and students’ learning achievement. Some of the steps those could lead towards this are suggested below.

- Review and adapt Textbook and Learning Materials Policy
- Develop new textbooks for the province
- Prepare implementation schedule for textbook development
- Develop a coordination and monitoring mechanism for the textbook development process
- Develop standards/criteria for textbook review
- Advertise in newspaper according to implementation schedule
- Short list successful bidders and agree on timeframe
- Carry out orientation/training of publishers/ authors on new curriculum
- Carry out internal review by textbook board according to the textbook review criteria
- Carry out provincial/area review by curriculum authority
- Approval of the manuscript by curriculum authority
- Final selection, printing and distribution

4. Teacher Training
Administration of a change in the curriculum may require new or additional skills. This is because changes in the curriculum may not be part of the existing repertoire of teacher skills. Teacher training therefore becomes essential in implementation. After adoption of the change, teacher training institutes (TTIs) need to be informed of the change. PEDs and TTIs review the new curriculum; identify the areas requiring training and design teacher training programs for the required knowledge, skills and attitudes. Existing training programs are the first to adopt the change. Depending upon the nature and the extent of the change and existing human resource and capacity of TTIs, roll out of training programs may take time but what is essential is the acknowledgment that this needs to be done as priority.

New textual material requires additional effort from teachers in learning the new concepts and adopting them in their teaching. The change affects right down to the individual lesson plans developed by the teachers. In most cases as witnessed in the past curriculum reviews, a change in the curriculum is confined to introduction of new textbooks while training of teachers in adoption of new teaching methodologies is ignored.
Implementation requires simultaneous change in both textbooks and teaching methodologies. Therefore more efforts are required on part of the teachers training institutes to ensure that the required change is communicated to the teachers accordingly and in time.

The importance of effective communication with teachers, explaining the purpose of the change and the potential for improving learning outcomes should be emphasized. Teachers must be treated as the most important factor in curriculum implementation. Their points of view and conditions should not be ignored. It should be kept in view that the best possible results for implementation may not be achieved by just passing out instructions for the change, but rather by taking teachers on board and convincing them about the need for the change. A ‘Continuing Professional Development’ (CPD) system is needed which provides continuous ongoing professional support to teachers at school level and also fosters the participation of teachers in their own professional development through reflective practices and peer learning.

Pre-service education of teachers normally focuses on equipping the teachers with necessary pedagogical skills to deliver a variety of contents at different age groups of children. The National Education Policy, 2009 has the following provision for pre-service teacher education in Pakistan:

- Teacher education curriculum shall be adjusted to the needs of the school curriculum and scheme of studies. The curriculum shall include training for student-centred teaching, cross-curricular competencies, and an on-site component.

Under the provisions of NEP, 2009 the existing system of teacher education will be replaced with Associate Degree and Bachelor Degree of Education in future. This means that Higher Education Commission has to take over the responsibility of preparing teachers for the whole system of school education. Therefore, the liaison between HEC and Punjab Curriculum and Textbook Board (PCTB) is required to implement any new curriculum effectively.

The sub-steps to be taken to improve the quality of teacher education are proposed as under.

a) **Pre-service**
   - The teachers’ educational institutions should exchange information about new curriculum with the ‘Higher Education Commission’ regarding teacher education in the province.
   - Liaison with the concerned institutions for aligning teacher education curricula with revised/new school curricula

b) **In-service**
   - Agree upon framework for training all teachers in new curricula
   - Prepare training schedule
   - Develop training materials
   - Carry out training of teachers in new curriculum according to
framework/plan
• Develop and implement mechanisms for supervision, mentoring and feedback to sustain the required teaching practices

5. Examination/Assessment and Evaluation
Curriculum Implementation Framework includes bringing about the necessary changes in assessment and examination practices to match the requirements of the new curriculum. For instance, a shift toward testing the comprehensive understanding and application of the content from rote learning of the textbook entails a major change in teaching methodology and vice versa. At the first level changes in curriculum require assessment and examination authorities to be informed. They carry out suitable modifications in examinations and give new instructions to examiners. At a deeper level, the change may require new types of assessment and examination techniques and systems. Curriculum construction lays out the details of changes in assessment and examination that may be required in each phase of curriculum development. Without it the objectives of the changes in the curriculum may remain unmet.

Teachers must be trained both in summative and formative assessment. Summative assessment to measure the degree of student achievement at the end of an instructional process and formative assessment used to facilitate student improvement by identifying areas of weakness. Its results should be fairly shared with the students as well as the parents. As a part of educational process we need to recognize the importance of assessment in achieving overall goals of education.

Steps to be taken for curriculum-based assessment are suggested below.
• Orientation of Board of Intermediate and Secondary Education (BISEs) and Punjab Examination Commission (PEC) on new curriculum
• Analyze implications of curriculum change on existing assessment practices
• Agree on way forward for aligning assessment practices with the demands of new curriculum Develop relevant material and orientation and training of paper setters/test item developers Develop model papers/tests based on curriculum approach
• Pretest and feedback on model papers
• Develop strategies with timelines for introducing the revised system on a large scale
• Create links to teacher training and textbook development

6. Feedback and Evaluation
Feedback and evaluation of the curriculum is a process of monitoring its implementation employing a number of means. Monitoring is a purposeful activity designed to serve one of the two:
1. Provide timely information for review and minor revision
2. Provide end of phase evaluation for the following phase of curriculum development.
In other words, the instruments of feedback and evaluation may have a short term use: they generate data, which is then used to carry out any revisions that may be necessary in the curriculum even prior to the next phase of new curriculum construction and implementation. This is an ongoing use. No major changes are ordinarily contemplated during curriculum implementation phase. Feedback and evaluation is initiated in the form of studies and reviews. Data generated from the feedback and evaluation mechanisms generates reports. These reports also inform the work of curriculum construction that is undertaken at the beginning of the next phase of curriculum development. This review is different from the one that may be carried out periodically and results in minor revisions.

7. **Principles of Curriculum Monitoring**

Curriculum evaluation involves data collection, review of implementation and technical studies. It is based on the following principles:

i) Data collection should be from a representative sample to be able to draw credible conclusions;

ii) Baseline situation should be sketched out to assess the impact of curriculum implementation;

iii) Sufficient number of observations at different time intervals should be taken to formulate an assessment on implementation.

iv) Communication and administrative systems in which curriculum implementation is taking place should be studied;

v) Data that is already available should be used where possible. For instance, examination data on student achievements contains information that is relevant to effectiveness of the curriculum;

vi) In-depth analyses should include detailed interviews with teachers, students, district education managers and other stakeholders.

In the context of Curriculum Implementation Framework following steps are suggested to institutionalize the feedback mechanisms for school curricula.

- Orientation of relevant stakeholders on importance of feedback
- Prepare concept for establishment of feedback mechanism
- Identify organizations responsible for collecting feedback
- Develop tools for feedback on all aspects of curriculum implementation
- Prepare schedule for data collection (when, how frequent and for what)
- Analysis of data, reporting / feedback for minor and major revisions
- Way forward for next revision cycle

**SUMMARY**

Evaluation is concerned with making value judgments about all sorts of things in our lives. In education, evaluation usually refers to making judgments about student performance and behaviours and the use of that information to enhance both learning/teaching and the curriculum. In education, product evaluation (student performance) is distinguished from process evaluation (the learning situation).
Evaluation in curriculum is useful for providing feedback to learners, determining how well learners achieved the objectives, providing information to improve curricula, assisting learners with decision making clarifying the stated objectives, and assisting others in making decisions about students.

Evaluation can occur formatively (during the learning experience), summatively (at the end of the learning experience) or diagnose (to determine deficiencies). To make evaluative judgments, needs useful data gathered from assessment and measurement techniques. Assessment involves the interpretation of measurement data. It makes sense of the data collected on student performance. Assessment may be norm-referenced (related to other learners) or criterion/standards-referenced (related to predetermined criteria/standards).

Measurement is the collection of data, usually in quantitative terms of student performance. A range of measurement devices is available. Useful techniques include standardized tests, teacher-made tests, oral tests, work samples, systematic observation interviews, questionnaires, checklists and rating scales, anecdotal records; sociograms and self-reports.

A curriculum evaluation algorithm involves seven stages, i.e. (1) evaluation presage, (2) task specification, (3) evaluation design, (4) data collection, (5) data analysis, (6) conclusions and recommendations, and (7) presentation of report. Curriculum materials may be evaluated by criteria such as: interest, authenticity, organization and balance, appropriateness and technical quality.

8. SELF-ASSESSMENT QUESTIONS

Q. 1 Compare the domains of measures of educational achievement and evaluation of the curriculum.
Q. 2 List the processes for which, information data are used in the evaluation of curriculum innovations?
Q. 3 Explain the value of a systematic statement of objectives of an educational programme for valid evaluation?
Q. 4 Develop a logical strategy for designing an evaluation of an educational programme?
Q. 5 List the steps involved in the evaluation process?
Q. 6 Explain the experimental research approach to finding out the effectiveness of a new curriculum?
9. REFERENCES


Unit -5

TEACHING AND INSTRUCTION

Compiled By:
S. M. Shahid

Reviewed By:
Dr. Sidra Rizwan
CONTENTS

Introduction .................................................................................................................. 105
Objective ..................................................................................................................... 105
1. Concept of Teaching and Instruction ................................................................. 106
   1.1 Nature of Teaching ......................................................................................... 106
   1.2 Concept of Instruction .................................................................................. 108
   1.3 Instruction .................................................................................................... 110
2. Characteristics of Effective Teaching .................................................................. 112
3. Need of Teaching and Instruction ....................................................................... 114
4. Process of Teaching and Instruction ................................................................... 115
   4.1 Maxims of Teaching ....................................................................................... 117
   4.2 The Phases of Instruction ............................................................................. 119
   4.3 Implications for Instruction .......................................................................... 120
   4.4 Need for Instruction ..................................................................................... 121
   4.5 Selection and Implementing Strategies of Instruction .................................. 123
5. Differentiate between Teaching and Instruction ................................................ 124
6. Self-Assessment Questions .................................................................................. 126
7. References .......................................................................................................... 126
INTRODUCTION

Teachers are blessed persons as they got an opportunity to shape the minds, attitudes and personalities of human beings, the prime creature of Almighty Allah. Therefore in this way a teacher assists the Lord.

Strictly speaking, education and instruction are mutually exclusive. You instruct soldiers. You teach students. An equipment manual contains instructions, but they are not instructions for instructing. An instructor lays down rules to be obeyed; a teacher strews ideas to be subverted. Instructions prescribe; education provokes. Instruction is regimentation; education is liberation.

Misrepresentation of teaching as instruction can poison social attitudes towards the teacher’s job. It makes it seem routine, mechanical and unimaginative. The content of a course makes little difference to its effectiveness: what matters is the way it is taught. Yet because of the notion that “instruction” is what happens in the classroom, committees scour syllabuses for comprehensive coverage, political correctness, utility, importance and, variously — apparently unaware that well-educated students will be critically minded and that critically-minded students will reject instruction. A well-taught course is always self-undermining, because it imparts the gift of a rational, critical response. The best teachers produce unruly and heterodox disciples. The best measure of a teacher’s excellence is the number of his pupils who depart from his ideas. That is how intellectual progress happens.

OBJECTIVES

After reading this Unit, the learner will be able to:
1. Understand the concept of teaching and instruction.
2. Explain the teaching process.
3. Discuss the maxims of teaching.
4. Describe the conceptual model of instruction.
5. Select and implement strategies of instruction.
6. Differentiate between teaching and instruction.
1. CONCEPT OF TEACHING AND INSTRUCTION

The word “teach” comes from Old English *taecan* that is in turn derived from the Old Teutonic *taikjan*, the root of which is *teik*, meaning to show and is traceable to Sanskrit *deik* through pre-Teutonic *deik*. The term “teach” is also related to “token” a sign or symbol. “Token” comes from the Old Teutonic word *taiknom*; a cognitive with *taikjan*. Old English *taecan* means to teach. So, “Token” and “teach” are historically related. To teach, according to this derivation, means to show someone something through signs or symbols: to use signs or symbols, to evoke responses about events, persons, and observations, findings and so forth. In this derivation, “teach” is associated with the medium in which teaching is carried on.

A descriptive definition of “teaching” in the 1500s would have been somewhat different from that of today. A descriptive definition then would, have been formulated from such notions as to teach is to give information; to show a person how to do something; to give lessons in a subject. The conventional sense of teaching nowadays is not entirely different. A descriptive definition of teaching can be stated as follows: teaching is imparting knowledge or skill.

The purpose of such a definition may be to point out the reference of the term, or to show how instances covered by the term differ from others with which it can be confused. Terms such as “impacting,” "knowledge,” and “skills” are often ambiguous. A descriptive definition will remove, as much as possible, this indefiniteness, by resorting to contextual usage. For example, in one context “impacting” means to share, as when someone says to teach is to share experiences. In another context “impacting” signifies the communicating of information by lecture. But even when resorting to context eliminates ambiguities, the term clearly denotes certain objects and just as clearly rules out others, there will be cases to which the term might or might not apply. Is the spreading of propaganda to be counted a teaching? Some persons will say yes and others no, depending upon their concept of propaganda and how to fit their notion of what it means to be educated. The descriptive definition of teaching as imparting knowledge allows the matter to be settled either way. A descriptive definition can focus thinking upon a particular course of development (Schefier 1960 pp. 19-28), it is then said to shade off into a programmatic definition. For example, if “impacting information” is taken to mean that lecturing is the imparting mode. Those, who advocate inquiry as the mode of teaching, will be quick to oppose the descriptive definition. They may admit the accuracy of the historical definition of “teaching” but still turn to their-own programmatic definition of “teaching” as inquiry. Thus, pedagogical discourse is often fraught with semantic issues.

1.1. Nature of Teaching

Previously teaching meant nothing more than “giving information and imparting knowledge”. It was the time when teaching was regarded as a bio-polar process: Teacher and the subject being its two poles. The child way altogether ignored. No attention was given to his need and desires. The child was not important and the teacher and the subject matter were considered more important than him. The child was measured by the adult
yardstick. The subject matter was read out by the teacher and the child simply memorized.

Readymade material was given to him, which sopped his energies. Modern education has brought the child into limelight. He stands as the focus of the educative process. Consequently, the concept of teaching has undergone a radical change in the light of this; we shall discuss various aspects of teaching as under.

1) **Teaching a Triangular Process**
Modern concept of the nature of teaching is that, it is a triangular or tri-polar process. The three focal points of this process are the teacher, the child and the subject matter. There is a close relationship among the three in fact. Teaching is a uniting force.

![Diagram of Teaching Process]

We cannot have teaching unless three are present. In all the three the teacher is the most active agent in the process of establishing the relationship and to bring about effective relationship. The teacher must understand his pupils on one the hand and have a thorough knowledge of his subject on the other. The relationship between the subject and the “child” suggests another aspect of teaching.

2) **Teaching is Giving Information**
There are so many things, which the child does not know or cannot know. It is therefore, essential to provide some useful knowledge to the child. Keeping in view his needs and capacities, it should be presented in a systematic and interesting way.

3) **Teaching is Causing to Learn**
Child cannot be treated like an empty vessel into which any type of information can be
poured down. We cannot force the child to learn. He will learn only, when he is willing to learn. So the teacher is to make the child-willing worker. He is to help the child to learn for himself. He is a mere instrument in facilitating learning on the part of the child.

4) *Teaching is Stimulating Learning*

The child will not automatically become willing to learn, the teacher must think of ways and means of stimulating and encouraging learning on the part of children. He should provoke their interests and motivate them to learn. He should create conditions in which they feel the need to learn.

5) *Teaching is Giving Guidance*

Simply arousing his interest and leaving the child to his own efforts is not sufficient. The child may make random movements, resulting in the sheer wastage of time, so he should be guided to do the right things in the right manner and at the right time. He should be able to make correct responses to the various stimulations in his environment. This leads us to another aspect of teaching.

6) *Teaching is Helping the Child to Make Effective Adjustments to his Environment*

The main aim of teaching is to enable successful social life. This requires the ability in the child to make effective adjustments to his environment. For this, he should be provided simplified environment in the school in which the child learns to overcome difficulties and make effective adjustments on a small scale. Also we should develop his innate powers and train him to use the same in the right direction.

7) *Teaching is Helping the Child to Develop Emotional Stability*

Teaching will be inadequate if we do not train the emotions of the child and develop his emotional stability. Right actions spring from right feelings. The child should feel a sense of security, which is possible in atmosphere of love and freedom. The teacher should have encouraging-and sympathetic attitude towards his pupils.

Teaching in short, is a process of imparting knowledge, motivating and guiding the pupils to learn through their own activities, training their emotions and developing their powers and capacities so that they are able to make effective adjustments to their environment and are better prepared for successful social participation.

1.2 *Concept of Instruction*

The specific teaching akin to skill training rather than to education in a broader sense is called “instruction”. May be audio-visual correspondence, individual, etc., from the observation and analysis of forty-nine tape-recorded lessons, the following operational definitions of strategy and tactic, as these terms, apply to instruction, were developed:

**Strategy**

A generalized plan for a lesson (s), which includes structure, desired learner behaviour in
terms of the goals of instruction and an outline of planned tactics necessary to implement the strategy. The lesson strategy is part of a larger development scheme.

Strategies are in a sense, the 'why' of specific teacher behaviour. Some are a function of more explicit 'now' goals, or 'one-lesson accessible' strategies; others, which take more than one lesson to develop and usually continue over a period of several lessons, are referred to as 'overtime’ strategies.

Either one-lesson-accessible or overtime strategies may be changed, modified or discontinued (with another substituted perhaps) as a lesson proceeds and the teacher interprets feedback from the students. One factor, which may give rise to such change in a lesson strategy, is the nature of that strategy in relation to the hypothesised and real readiness and rate of progress of the unique group of students (pupils).

Strategy planning is done at a time other than that at which the teacher is teaching; however, this is not to deny that the teacher may get some ideas for future strategies while in the process of teaching.

**Tactic**

Goal-linked influenced/influencing behaviour of the teacher - the way a teacher behaves in the instructional situation in working towards the development of the strategy; units of teacher behaviour through which he fulfils his various instructional roles with the students of his class from moment to moment; the components of teacher behaviour through which the teacher, the students and the subject matter interact.

A tactic may range from no overt teacher behaviour (e.g. using silence for a specific purpose) to one question or statement to a complex of verbal or purposeful non-verbal teacher behaviour interlaced with student behaviors.

In the lessons observed, it was found that one lesson might vary from one tactic; for the whole lesson to a highly complex interweaving of several different tactics. In some cases, while using one tactic with an entire class, a teacher may employ several different tactics at different times or at the same time with different individuals within the total group. Some tactics may be directed towards one child and some towards a group of children; some may be in the form of one teacher behaviour directed towards one learner response, while others are more complex and dependent upon a sequence of teacher-student interactions; still others may be directed to learner responses at some time in the future.

It also became evident that a given lesson may illustrate two different, kinds of teacher tactics, planned tactics and responsive tactics. The difference between the two is that planned tactics are those a teacher decides to use to implement his strategy; they are planned before the lesson takes place. Then as the teacher uses these tactics with the class, certain responses by the children may clue him to apply a different tactic with a particular child in terms of the goals established or in order to enhance the child's self-concept. In this case, the teacher draws from his tactic repertory, or he may consciously
or subconsciously invent a new (new to the teacher,) tactic to meet the specific situation.

1.3 Instruction

After an operational definition of tactics and strategies had been build, attention was turned to searching for the ways in which tactics and strategies fit into the total picture of instruction; that is, an attempt was made to seek relationships among tactics, strategies, teacher behaviour, goals of education and the learners.

Smith provided the idea that led to the development of the Conceptual Model of Instruction:

Everyone knows that the teacher not only influences student behaviour, but that he is also influenced by student behaviour. The teacher is constantly observing the student and modifying his own behaviour in terms of his observations. We may, therefore, say that instructional behaviour consists of chain of three links - observing, diagnosing, acting, (Smith 1963, p.296).

The idea of influencing influenced teacher behaviour seemed most intriguing, as was the picture of the teacher as behaviour observer and diagnostor. By applying these two ideas, the following, four aspects of instruction were identified.

1. Teacher planning - in terms of what the teacher knows of the learner, the curriculum, the situation.
2. Teacher behaviour, initiatory - to create a focus for thinking and working, what the teacher does to get things started.
3. Teacher observation, interpretation and diagnosis of Learner behaviour in terms of the situation, knowledge of prior experiences of the learner, prior observations of learners behaviours, enhancement of child's self-concept the curriculum (affective, cognitive and action dimensions).
4. Teacher behaviour, influenced/influencing influenced by the observations, interpretations and diagnosis of learner behaviour and influencing to the degree that teacher behaviour stimulates further learner behaviour.

Consideration of the flow of those aspects during the process of instruction led to the development Of the Conceptual Model of Instruction (Fig. 1), from which it can be seen that the potential lesson takes shape as the teacher, making decisions about goals, structure and planned tactics, begins the development of the strategy. Teacher planning (1) is completed.

Teacher behaviour initiatory (2) is a tactic that creates the focus for the lesson and sets the appropriate structure. As a result of the teacher behaviour, initiatory, the children become aware of some of the, goals that will direct their activity as well as their evolving responsibilities in the specific instructional situation: The lesson begins to unfold.

At the same moment the initiatory tactic takes place, teacher observations, interpretation and diagnosis of learner behaviour (3) take place. The teacher observes the consequences of his influencing behaviour. Some observations’ may be singular in nature, leading
directly to influenced teacher behaviour, some may take place for a longer period of time over, a more complex series of learner-teacher behaviours as related to the purpose of the tactic; some may yield information about the learners that is not directly related to following the teacher behaviour.

For example, while a group of third grade children were working to make a compass, one said: The north part of one magnet will attract the north part of another magnet. Rather than stop the lesson to attempt to correct this misconception, the teacher made a mental note of the response, which became information to act on in the future (3a) and possibly the basis of planning for a future lesson. In this case, the observation interpretation and diagnosis of the learner behaviour did not lead to influence teacher behaviour at that particular moment.

Figure 1: A conceptual model of instruction.
As the lesson continues the teacher's observation and interpretation may lead to the diagnosis that the initiatory tactic is developing according to plan and the tactic is therefore, continued (4b-Continuing tactic). It may be, however, that the initiatory tactic is not achieving the intended purpose and the planned teacher behaviour is consequently modified or discontinued and another initiatory tactic started (4c-new tactic): or the lesson may be aborted (4d-closing tactic). Thus, teacher behaviour influenced/influencing (4) is initiated. The teacher behaves according to a previous observation, interpretation and diagnosis of learner behaviour (influenced teacher behaviour). And in that the teacher behaviour is intended to feed forward, to new learner behaviour (back to 3), the teacher behaviour is influencing.

Once having achieved the focus and structure for the lesson, the strategy implementation tactic(s) evolves, A 4, 3, 4, 3...behaving-observing cycle develops; this 4, 3 cycle is the interactive heart of instruction. During this sequence, one kind of tactic a teacher might use, which is an exception to be development of the lesson strategy, is teacher behaviour designed to enhance immediately a child's self-concept (4a-tactic: child self-concept).

If the strategy is won or time has run out a closing tactic (4d) is employed. In one case, the topic may be closed off, not to be reconsidered (4d); in another case, the closing tactic may set the stage directly for work next time (4d2). The teacher may say, “We will not be able to complete this work today. Tomorrow, let’s begin just where we left off. When you will come into the room, after recess you may get the materials with which you were working and continue”. The use of 4d implies that the-day's closing tactic provides information, which the teacher will consider in planning the next lesson.

The ways; in which the strategies and tactics relate to the four aspects of instruction; visualized in the model are:

a) The first step, teacher planning is devoted to developing a strategy for a lesson or for a series of lessons in terms of selected goals. Planned tactics are decided upon.

b) Teacher behaviour in the class situation initiates the tactics in action.

c) Teacher observation, interpretation and diagnosis are made in terms of the purpose for which the tactic was initiated.

d) Teacher behaviour proceeds with tactic as planned or the tactic is modified as a result of prior observation, interpretation and diagnosis. In reaction to students' interaction, teacher may draw on responsive tactics to pull certain students into, class interaction to take advantage of problems question, etc. which arise.

It may be concluded, therefore, that the central directive element of instruction is the lesson strategy and the essence of classroom interactions, the lesson tactic(s).

2. **CHARACTERISTICS OF EFFECTIVE TEACHING**

1) **Good Teaching is Stimulating**
Simulation and inspiration are of fundamental importance in teaching. A good teacher will try to stimulate his pupils for work, or otherwise they become passive and
disinterested in studies. Without adequate stimulation if pupil acts, no worthwhile learning force takes place.

2) **Good Teaching Involves Skill of Guiding, Learning**
   The pupils need guidance to do the right things, in the right manner and at the right time. But guidance is not to be imposed on the child. It should be given skillfully through suggestions, examples and appropriate environmental situations.

3) **Good Teaching is well planned**
   A good teacher organizes and plans the subject matter in advance. Without proper planning, effective delivery of the lesson is not possible. However, planning must provide scope for necessary changes due to unexpected changes that may arise in the classroom.

4) **Good Teaching is suggestive and Co-operative**
   A good teacher will not impose anything on the child. Rather he will seek his cooperation and suggest activities, ideas, materials, etc. It is a psychological fact that suggestions take deeper root in the minds of children whereas direct advice is generally repulsive to the children. For example, to inculcate his qualities of courage and fortitude, life stories of brave personalities may be suggested to read.

5) **Good Teaching is Kindly and Sympathetic**
   A good teacher is 'always kind and attends to his pupils' difficulties and doubts sympathetically. They feel that the teacher is their well-wisher and thus whole-heartedly co-operate with him. On the other hand, a harsh teacher can never elicit warm response from his pupils.

6) **Good Teaching is a Democratic**
   Good teaching should be based on democratic principles. The teacher should have due regard for the rights and individuality of the child. Methods of teaching and subject matter should be selected from this viewpoint.

7) **Good Teaching is both Diagnostic and Remedial**
   The teacher must study and assess the inborn qualities of the children individually. Their limitations, handicaps and difficulties are to be discovered and remedial measures suggested. Like a Doctor, the Teachers prescribe treatment for it.

8) **Good Teaching is Co-relative**
   A good teacher does not simply narrate various items of knowledge in watertight compartments. S/he tries to link the new knowledge and experience of pupils. He also tries to co-relate his subject with craft, their physical and social environment.

9) **Good Teaching Literate the Learner**
   Good teaching develops in the child habits of initiative in dependent thinking, self-reliance and self-confidence. It enables him to learn for himself and, reduces his dependence upon the teacher. That is to say, the child is liberated from teaching.
3. **NEED OF TEACHING AND INSTRUCTION**

M.D. Alcorn, J.S. Kinder & J.R. Schunert (1970) in their book “Teaching in Secondary Schools” quote six patterns of teacher behaviours, which have been developed by Wallen and Travers.

1) **Patterns from Teaching Traditions**
   The teachers teach generally the same way as they were taught by their teachers and specially by the way of the teacher whom they identify as their ideals.

2) **Patterns from Social Learning**
   The teachers work generally as a prisoner of their own background and develop the same type of behaviour among their students as seen by them.

3) **Patterns from Philosophical Traditions**
   Each and every teacher, whether he knows or not, teaches according to one or other philosophy of education.

4) **Patterns from Conditions of School and Community**
   The teachers generally work in the school in the way, which the school administration and the members of community expect from them.

5) **Patterns from Research**
   Some teachers conduct research on learning and teach according to that pattern.

1) **Interpersonal Behaviours Based on Interpersonal Roles**
   The teacher can know students better if they carefully observe and understand their emotional, intellectual and social needs and interests.

   The teachers can demonstrate exemplary values and character if they handle situations firmly, honestly and patiently.

   The teachers can work with colleagues, principal, other staff members and parents in proper plan and carry out various inter-school activities and communicate both in formal way and informal way.

   The teachers can properly behave if they co-ordinate and assist in for community and hold-and attend seminars, workshops, conferences and discussion groups.

2) **Pedagogical Behaviours Based on Pedagogical Roles.**
   The teachers can delineate the course of teaching through determining major areas to be covered and scope and sequences of units, topics and lessons to be followed.

   The teachers can identify and use basic sources if they enrich their understanding of the subject area and enrich their teaching in classroom.

   The teachers can determine the teaching objectives of their subjects if they set objectives concerning content of the subject, concerning growth of students and involving different levels of understanding.
The teachers can carry out classroom teaching if they properly use various types of teaching methods, techniques, devices and activities and integrate various resources into lessons.

The teachers can understand their students if they adapt their teaching according to the spiritual, emotional, social and spiritual needs of students, relate teaching to students' home and daily environment and relate teaching to other school subjects.

The teachers can manage classroom climate if they coordinate and organize the physical climate, establish daily routines and maintain disciplined and cooperative behaviour. The teachers can search theories, ideas and practices if they visit libraries, pursue advance study, obtain higher degrees and conferences and communicate with the teachers on local basis, national basis and international basis.

The teachers can observe and assess classroom teaching through monitoring teaching plans, effects of teaching on students and assessing progress and achievement of students.

4. PROCESS OF TEACHING AND INSTRUCTION

The task of teaching is complex and has cyclical nature.

Complexity of Teaching Process
Joel M. Levine presents three models of teaching, which show complex nature of learning.

Basic Model of Teaching (Complexity)

![Diagram showing complexity](image)

Joel M. Levine points the following about complex nature of learning in the above shown three circles.

a) Point A is beginning of teaching work in all the three circles.
b) Circle (A) provides shortest path to the goal, which means in other words, it is the
most successful path of reaching.

c) Circle (B) shows that the teacher started into wrong direction from his starting point “A”. If he goes either way i.e. AD or AB or ABC or ADB, he is creating problems for the students. In order to be successful in achieving his goal the teacher will have to come back to “A” point to reach “G” point, which is the goal. If he continues to move in different directions, he cannot reach the goal.

d) Circle (C) shows that there are sixteen major factors to bring into line.

He has identified the following sixteen factors, which have to be managed if the teacher wants to attain his goal of teaching (include P. 642 be here). Each spoke in Circle (C) represents one factor.

1. Delineating course of teaching units, topics and daily lessons.
2. Identifying and using basic sources of the subject.
3. Determining objectives of the course, units and lessons.
4. Procuring and using teaching resources.
5. Getting to know other teachers, administrators and staff.
6. Becoming familiar with school policies and expectations.
7. Maintaining emotional stability and physical health.
8. Getting to know background, needs and interests of students.
11. Motivating students.
12. Determining teaching strategies and pace of instruction.
13. Utilizing various teaching methods and activities.
15. Designing and using various assessment techniques.
16. Assessing student’s progress and achievement regularly.

The first seven factors he included in the Development phase, the next six in the implementation phase and the last three in the evaluation phase.

- **Cyclical Nature of Teaching Process**

  John Dewey (1929) described that teaching is considered of cyclical nature, which have the phases of diagnosis, preparation, guiding teaching and evaluation. It comes back to preparation as the process of teaching repeats. The phases, characteristics and purposes of teaching as a cyclical process are:

**Phase of Diagnosis**

The characteristics are to determine present state of knowledge and needs of students on the one hand and determine present state of readiness to learn of students on the other. The purpose is to determine what should be done for focus planning and efforts.

**Phase of Preparation**

The characteristics are to plan teaching, locate resources and carryout research and organize and develop curriculum. The purpose is to master subject matter knowledge and
be ready for teaching.

3) Phase of Guiding Teaching
The characteristics are to select activities and methods appropriate for students, subject and objectives. The purpose is to carry out teaching programme.

4) Phase of Evaluation
The characteristics are to make plans and assess plans as teaching proceeds to determine success of teaching and learning and modify plans when necessary. The purpose is to assess effectiveness of teaching.

4.1 Maxims of Teaching
1) Proceed from Known to Unknown
It is said that the old knowledge serves as a book from which the new can be hanged, so that the new knowledge may be acceptable. The teacher must try to win over some part of the child's past experience. To act as it were, as its host ideas, sensations and impressions can, be appreciated or assimilated. When partially familiar they fit into the relevant mass, a foreign idea finds the mind but a glass wall on which it can gain no foothold, so, an attempt has to be made to remind the pupils of what they know already, so as to be ready to pin on to it the new knowledge. While using the previous knowledge the teacher must see that it is perfect, definite and complete. The teacher must search delight to find which of their experiences has been such that by recalling them to the child, he is likely to ensure a ready welcome for the new knowledge.

2) Proceed from Analysis to Synthesis
Analysis consists in taking a thing apart into its elements. Synthesis is the complement of analysis. When the child comes to the class his knowledge is incomplete, indefinite and imperfect. The teacher is to round it off. Therefore, the teacher should start with the analysis to view the complex whole through its constituent elements. Analysis is to be employed chiefly to correct and systematize the teachings of every day experience rather than serving and ending in itself. Its purpose is mainly to prepare the way for further synthesis. Thus, analysis must be followed by synthesis otherwise analysis is useless. Analysis makes the things comprehensible and puts it in a clear and broad framework. Synthesis afterwards makes it definite and fixed. The teaching procedures should be neither purely analytic nor purely synthetic but a judicious blend of both.

3) Proceed from Simple to the Complex
The teacher should keep up the interest of the pupils in the lesson by presenting easier and simpler materials to be followed later by complex and difficult materials. Simplicity and complexity should be determined from the child's point of view. Whatever material is taught to the child must be authentic.

4) Proceed from Whole to Part
Whole is more meaningful to the child than to learning of the part: The part approach to learning tends to ignore needs. Learners have to develop some kind of a frame of
reference that will help them to relate one aspect of what is to be learned, to its other, aspects as well as to their previous experience. May Seagoe concluded after her research that the ‘Whole’ approach was generally superior to the part approach, ‘Whole’ learning is better than 'part' learning, it is essential to form meaningful wholes.

5) **Proceed from Concrete to Abstract**

It is very important for the child to be able to abstract idea. To achieve this purpose, we should approach the child via concrete objects, activity and examples. The imagination is greatly aided by concrete material so while teaching obstruction in any subjects: we should take, help of concrete things as far as possible and then learn to higher levels of thinking.

6) **Proceed from the Particular to the General**

Particular facts and examples should be presented to the children before giving them general rules and principles, as they are easier to follow. The process, of induction is easier to understand than the so-called fact. In fact, the study of particular facts should be able to convince the children themselves to arrive at general rules. The process of learning can only become complete if we proceed from particular and finish with the general rule to definitions. So the pupils are to be disengaged from the particular as soon as they can apply the general truths to elucidate further facts. Induction and deduction must go side by side.

7) **Proceed from Empirical to Rational**

Empirical knowledge is based on the observation and firsthand experience rational knowledge implies a bit of obstruction and argumentative approach, it is a general feeling that the child feels the rational basis for any knowledge much after he has experienced it in his day-to-day life. For instance, plane geometry would make better sense if it were taught in the practical context of everyday life, instead of in the format of highly abstract theory. It is always good to begin with what we see, feel and experience than with what we argue, generalize and explain.

8) **Proceed from Psychological to Logical**

We should precede teaching in a psychological way that is, taking into consideration the child, his interests, needs, recreating and mental makeup. To make a good start we should present the material in a logical way, firstly there should be the selection of the matter in a proper sequence.

9) **Proceed from the Actual to the Representative**

The child learns more quickly from the actual and real objects. The real objects from their representations have been taken for granted. Wherever possible the teacher should show the real object. This is particularly, indeed, in the earlier classes, as the information of small children is limited, for them it is always safe to proceed from concrete to abstract, from actual to representative, from near to distant.
4.2 The Phases of Instruction

The sequence of transformational events is affected by learning processes. As these events unfold in the course of an act of learning, they may be influenced to a greater or lesser degree and in a number of different ways, by the external events of instruction. Some processes (for example, the establishment of expectancy) are obviously affected by instruction whereas others (for example, the internal processes of memory storage) may be only indirectly influenced. It seems reasonable, therefore, to distinguish as successive phases of instruction, those interactions of external stimulation and learning processes that can most clearly be the course of learning. Designating instructional phases in this way helps to emphasise the function of instruction as supportive of learning and thus to suggest the variety of tasks involved in teaching.

Parenthetically, it may be noted that as the learner develops in sophistication, many of the events of instruction, initially observed as planned external events, come to be accomplished by the learner himself. In other words, to a greater or lesser degree, he becomes a “self-learner”. He may supply his own motivation, develop his own system of coding, initiate strategies of search and retrieval, and supply his own feedback. Naturally, the teacher wishes to encourage this growing tendency towards independent learning. This is done in a number of ways, including the progressive reduction in external “cueing” for coding and retrieval processes as the learner develops.

The phases of instruction as related to the processes of learning may be identified as follows:

1) Motivation Phase
The preparation for learning is accomplished by instruction, which activates motivation by appealing to student interests. Communications of the teacher during this phase have the additional purpose of relating these interests in an expectancy of “what the student will be able to do” once he has learned.

2) Apprehending Phase
During this phase, teaching is concerned with arousing attention, in a general sense and also with providing stimulation (often verbal), which “directs” attention so that particular features of the stimulus situation are selectively perceived.

3) Acquisition Phase
This phase of instruction supports the process of entry into long-term store. Coding processes may be provided or suggested. Alternatively, a set to employ a strategy of coding may be activated by communications from the teacher.

4) Retention Phase
This phase pertaining “storage” is included for the sake of completeness. The manner, in which internal processes of storage (such as interference, simplification and the like) can be directly influenced by instruction, if indeed they can be, is not entirely clear. It seems evident; however, that indirect influence can be brought to bear by suitable arrangement of learning conditions, as, for example, in presenting dissimilar stimuli together rather
than highly similar ones, thus reducing the possibility of interference.

5) Recall Phase
External instructional events during this phase may take the form of providing cues to retrieval or of monitoring the process of retrieval to insure that suitable strategies of search are employed. Teachings also include the conduct of “spaced reviews” providing opportunities for retrieval or occur.

6) Generalisation Phase
During the ‘Generalisation phase’, the teacher provides situations calling for the transfer of learned knowledge and skills in novel ways, and providing cues for application to previously un-encountered situations.

7) Performing Phase
Instruction oriented to this phase of learning is largely a matter of setting occasions for the student to “show” that he has learned. Obviously, these occasions set the stage for the feedback that comes next.

8) Feedback Phase
The feedback phase is one in which information is supplied to the student concerning the extent to which his performance has reached or approached a criterion standard reflected in his expectancy. What is accomplished in this phase is the confirmation of the expectancy, affecting the process of enforcement.

4.3 Implications for Instruction
After a look at the Conceptual Model of Instruction, attention is turned to what this model implies about instruction, how it ties together past experiences and opens up some new hypothesis for further consideration.

1) Instruction is viewed as a Two-way Situation
In one case, students are growing towards the stated curricular goals; in the other, teachers are learning about the children or their classes, the effect of their behaviour upon a specific group of students, ways to behave in terms of certain goals and the limitations of present instructional goals: students grow towards curricular goals and teachers' tactic and strategy repertoire is empirically extended.

2) One Relationship between Learner Behaviour and Ongoing Instruction is, Indicated
The tactical element loop illustrates the role of the learner behaviours in instruction and identifies some specific points at which learner behaviours affect the nature of instruction.

3) The Necessity for Continuous Feedback (completing the tactical element cycle) in Shaping Instruction is Highlighted
According to the model, it may be predicted that if part of the tactical element loop were
eliminated the effectiveness of instruction would became limited. When the loop of tactical elements is destroyed, effectiveness in diminished and the cumulative learning effect of instruction for both teacher and student is impeded.

4) **Use of the Model Provides One Basis from which some Aspects of instruction may be observed, discussed and experimented with**
The notion of tactics and strategies provides one useful organizer for observing, classifying and experimenting with teacher-learner-behaviour.

5) **Implicit in the Model is the Goal-directed Behaviour of the Teacher; the Control Points at which Goals affect the Behaviour of those involved in Instruction are Suggested**
The model indicates the specific points at which goals affect the instructional process as the bases for strategy decisions, as planned tactics are decided upon as responsive tactics come into the situation and as the tactical element loop proceeds from moment to moment during instruction.

6) **Evaluation in Instruction is not something Unique to the Instructional Situation: Rather, it is a part of the Tactical Element Loop**
Viewed from the perspective of the tactical element loop, instructional evaluation proceeds while the students learn, during instruction rather than apart from it (although it is recognized that for some purposes some evaluation takes place apart from instruction).

7) **One Route to Increasing Teacher Effectiveness through a Purposeful Experimental Approach to Instruction**
Implied is a relationship between a teacher's tactic repertory (both planned and responsive) and the variety of instructional goals accessible through his behaviour. Thus, one route to extending one's tactic repertory may be through reflecting on his spontaneous behaviour as well as purposeful experimenting to discover the real effect of a certain hypothesised tactic upon the students.

8) **The Model. Provides a Unifying element through which some of the Studies about Various Aspects of Instruction may be related**
The model may serve to place goals, curriculum, pedagogy, teacher, student, materials, etc. in perspective so that increased understanding of what such factors are and how or where they relate to the total picture of instruction may be further hypothesised.
In summary, perhaps the essential implication of the model about teaching is that teaching is enquiring and invites a teacher's thinking and behaving in terms of certain goals or enduring purposes. In another sense, teaching is viewed as learning about the learners; learning about the effect of one's behaviour on the learners, based on a continuing stream of feedback from and about the learners and learning as the teacher extends the goals, which direct his activity.

4.4 **Need for Instruction**
The teachers in general rely on their knowledge of the subject matter of their field of
specialization alone, in order to teach and thereby try to achieve a high level of competence to become effective teachers. The concentration is more on dispensing of knowledge to the students rather than in finding out if the students have comprehended what the teacher has tried to pass on to them. Invariably, teachers are not concerned about their abilities to communicate effectively, or the pedagogic approaches that they should adapt. There are a number of teachers, who do not even feel the need to improve these. To them teaching centers around one basic issue the subject matter as prescribed in the syllabus. All efforts are made to cover the syllabus rather than uncover it for the students to explore, analyse and critically study in order to assimilate the knowledge and make it their own. Further, the teachers do not feel the need to keep abreast of the latest developments in the field. They do not look upon teaching as a complex process requiring competence in several fields such as ability to understand the students, the different ways by which they learn the skills of teaching, the evaluation measures to be adopted, etc. As such, the concept of professional preparation of teachers, which is an accepted fact at the school level, has not taken roots at the tertiary level.

In what way is the teacher equipped to do his job satisfactorily? He or she has a postgraduate degree, perhaps with an additional degree, M. Phil, or Ph.D. indicating mastery of the subject matter and/or research experience. If fortunate, he would have had an effective teacher himself and model his teaching accordingly. Limitation appears to be the only method adopted. If the master was an expositor of knowledge, he too is an exponent. On the other hand, if the master has repeated verbatim form the textbook or any other prepared material, the teacher, too, considers that as the best method to follow. The teacher is not aware of the repertoire of method and approaches available, which can be used, judiciously either alone or in combination. How would he know about these unless he is directed and guided in this aspect?

Having knowledge of the methods alone is not sufficient to become a good teacher. Under the guidance of a trained person he should have tried out these methods, remembering to match the methods with the subject taught and the needs of the students. Moreover, methods are likely to differ from subject to subject and from one level of achievement to another. A theoretical knowledge of the methods precedes the application of these methods.

The second aspect of the requirement would be the psychological basis to understand students. Students should be motivated to learn. Unless they are ready to learn, what is being taught is not absorbed by receptive minds? When the inclination to learn is not kindled, an elaborate lecture hardly leaves any effect on the assembled students, A lecturer should be aware of the different ways to prepare and encourage the students to learn. Attitude to learning is more important than learning itself. Reviewing of the material studied in the previous class, listing the specific objective of a topic to be learnt giving an outline of the material to be dealt with during a period of time, indicating the significant aspects of the topic and introducing the subject especially through any of the audio-visual aids would perhaps create a positive attitude to learning.
Knowledge of certain principles drawn from learning theories will be potentially useful to a new teacher. 'Learning by doing' is still considered as an acceptable slogan. This does not imply that students do not learn anything, when they are passive. They are likely to learn more if, they are actively involved in the learning process. Further, learning takes place when there is opportunity for frequent practice, repetition in varied contexts and when appropriate learning materials that would encourage generalisation and also the ability to discriminate and critically examine the material studied are provided. Reinforcement when used properly is an important motivator. Reward from a teacher such as nodding, indicating acceptance of a correct response, can be extrinsic or can also be intrinsic reward (self-reward) as in the case of finding satisfaction in learning the material taught. However, there are negative, reinforcements such as punishments and failures but generally it is considered that positive controls (rewards and successes) are to be preferred to negative.

4.5 Selection and Implementing Strategies of Instruction

Selecting instructional strategies is one of the final steps in planning for instruction. Instructional strategies are derived “from a number of sources, including the objectives, the subject matter, the pupil, the community, and the teacher.

Teachers vary in their styles, models, and skills. By style we mean the unique, personal qualities that a teacher develops over the years to distinguish himself or herself from all other teachers.

When we speak of models of teaching, we mean a generalized role a pattern of methods - such as discussion leader, television instructor, or foreign language informant. The so-called Socratic method of stimulating thinking is a model. Muhammad (peace be upon him), for example, used both a model (preacher) and a method (sermonizing).

Skills of teaching are those generic and specific competencies necessary to design and carry out instruction. Lesson planning, for example, is a generic skill; that is, it is pertinent to all teachers at all levels. The ability to teach pupils to perform the division of whole numbers is an example of a specific skill. Both the, models and skills must be compatible with the teacher's style. Instructional strategies must be appropriate to the teacher's style, model, and skill.

Instructional strategies, styles of teaching, and teaching skills are all selected, adopted, and implemented to successfully fulfill instructional goals and objectives.

The ultimate purpose of all strategies, styles, models, and skills is the fostering of student achievement.

The various instructional components should be organized into, among other types of plans, short-term units and daily lesson plans. Although teachers may design their own formats for unit and lesson plans, generic outlines are suggested in next sections. As teachers gain experience, less detail in planning is possible. However, some planning is
always necessary. The reader is referred to selections from the new large body of research on effective presentation of instruction.

5. **DIFFERENCE BETWEEN TEACHING AND INSTRUCTION**

Teachers are often called instructors because their job is to instruct, to give knowledge or instructions. The subtle difference between "teach" and *instruct* is that you can teach almost anything: concepts, ideas, theories or, say, history. When you instruct someone, you're giving them a set of tools or tasks to do something specific. That's why furniture, toys, and model rocket kits come with instructions: they instruct you how to assemble them.

**Difference between Teaching and Instruction**

Teaching is explaining how something is done while instruction is telling how something is done.

These two go hand in hand together but are oftentimes confusing since they're almost similar in meaning.

Teaching is more complex in nature. When we talk about teaching, we are dealing with different techniques, strategies, and approaches that will facilitate learning. Teachers have to come up with varied instructional materials and must use the right strategies in teaching their lessons.

Teaching is also a never ending process. By the time individuals start going to school to the time they graduate and start working, they're involved in the teaching-learning process. They don't only learn from teachers but also from those around them.

This makes teaching both formal and informal. It is formal when it occurs inside the classroom or informal when you learn things outside the portals of the school. For instance, you learn to read and write in school with the help of your teachers. On the other hand, your parents teach you informally about living life and correct values. When we talk about instruction, it's not as complex as teaching.

Instruction is simply giving direction. You instruct someone on what to do and how to do it. For instance, in school you're given instructions by your teachers on how to answer a test or how to perform an experiment. After which, you're simply left to do your work on your own. Instruction makes learners dependent on the teacher. You're told what to do and oftentimes, there are steps you need to follow. Instructions must be understood and followed strictly in order to accomplish a particular task. Once you fail to do so, you won't be able to finish the task correctly.

Teaching and instruction go together especially in education. Both are needed in helping people learn and develop as individuals.
Function

- An action performed by a device, department, or a person that produces a result.

Example:
The function of teachers is to help students learn by imparting knowledge to them and by setting up a situation in which students can and will learn effectively.

Teaching and instruction go hand in hand but are oftentimes confusing since they're almost similar in meaning. Teaching is more complex in nature. When we talk about teaching, we are dealing with different techniques, strategies, and approaches that will facilitate learning. Teachers have to come up with varied instructional materials and must use the right strategies in teaching their lessons. Teaching is also a never ending process. By the time individuals start going to school to the time they graduate and start working, they're involved in the teaching-learning process. They don't only learn from teachers but also from those around them. This makes teaching both formal and informal. It is formal when it occurs inside the classroom or informal when you learn things outside the portals of the school. For instance, you learn to read and write in school with the help of your teachers. On the other hand, your parents teach you informally about living life and correct values.

When we talk about instruction, it's not as complex as teaching. Instruction is simply giving direction. You instruct someone on what to do and how to do it. For instance, in school you're given instructions by your teachers on how to answer a test or how to perform an experiment. After which, you're simply left to do your work on your own.

Instruction makes learners dependent on the teacher. You're told what to do and oftentimes, there are steps you need to follow. Instructions must be understood and followed strictly in order to accomplish a particular task. Once you fail to do so, you won't be able to finish the task correctly. Teaching and instruction go together especially in education. Both are needed in helping people learn and develop as individuals.

The main differences between the teaching and instruction are: teaching is open to questions, students can always ask questions regarding the subject they are taught whereas instruction is like giving guidelines, one needs to listen to it and is supposed to follow it. In instruction, the student cannot question the subject matter. Again teaching is not biased whereas the instruction can have a biased approach. Teaching aims at developing brains of students, it provides them with the opportunity to argue things and evaluate things and then form an opinion whereas instruction has set opinion about the belief that is being taught and hence, the student’s opinion does not matter or taught in a manner that a student is not supposed to make his own opinion. Teaching is a positive activity in which students receive knowledge whereas instruction is mostly associated as a negative kind of teaching where students are expected to follow what is taught to them without making any enquiry. Thus sometimes instruction is also referred as brainwashing.
6. SELF-ASSESSMENT QUESTIONS

Q. 1 Elaborate the concept of teaching and instruction.
Q. 2 Critically analyze the teaching process in your institution.
Q. 3 How will you as a teacher proceed in your class while following the maxims of teaching?
Q. 4 Describe the conceptual model of instruction.
Q. 5 How can the strategies of instruction be selected and implemented effectively at secondary level in Pakistan?
Q. 6 Compare teaching and instruction by listing the similarities and differences.

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MODELS OF TEACHING IN INSTRUCTION

Compiled By:
S. M. Shahid

Reviewed By:
Dr. Sidra Rizwan
# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>129</td>
</tr>
<tr>
<td>Objectives</td>
<td>129</td>
</tr>
<tr>
<td>1. Models of Teaching</td>
<td>130</td>
</tr>
<tr>
<td>1.1. Concept of Model</td>
<td>130</td>
</tr>
<tr>
<td>1.2. Concept Model of Teaching</td>
<td>130</td>
</tr>
<tr>
<td>1.3 Characteristics of a Model of Teaching</td>
<td>130</td>
</tr>
<tr>
<td>1.4 Functions of a Model of Teaching</td>
<td>131</td>
</tr>
<tr>
<td>1.5 Assumptions of Models of Teaching</td>
<td>131</td>
</tr>
<tr>
<td>1.6 Elements of a Model of Teaching</td>
<td>132</td>
</tr>
<tr>
<td>1.7 Need for a Model of Teaching</td>
<td>132</td>
</tr>
<tr>
<td>1.8 The Nature of a Model of Teaching</td>
<td>133</td>
</tr>
<tr>
<td>1.9 Approaches in Building Models of Teaching</td>
<td>134</td>
</tr>
<tr>
<td>1.10 Social Family of Models of Teaching</td>
<td>135</td>
</tr>
<tr>
<td>1.11 Information Processing Family of Models of Teaching</td>
<td>135</td>
</tr>
<tr>
<td>1.12 Social Family of Models of Teaching</td>
<td>136</td>
</tr>
<tr>
<td>Main Points</td>
<td>136</td>
</tr>
<tr>
<td>Description of Models</td>
<td>137</td>
</tr>
<tr>
<td>2. Glaser: A Basic Teaching Model</td>
<td>137</td>
</tr>
<tr>
<td>3. Herbert: Formal Steps in Teaching</td>
<td>138</td>
</tr>
<tr>
<td>4. Concept Attainment Model</td>
<td>140</td>
</tr>
<tr>
<td>5. Piaget Cognitive Growth Model</td>
<td>142</td>
</tr>
<tr>
<td>6. BTES: Academic Learning Time Model of Classroom Instruction</td>
<td>145</td>
</tr>
<tr>
<td>Main Points</td>
<td>147</td>
</tr>
<tr>
<td>7. Summary</td>
<td>148</td>
</tr>
<tr>
<td>8. Self-Assessment Questions</td>
<td>148</td>
</tr>
<tr>
<td>9. References</td>
<td>148</td>
</tr>
</tbody>
</table>
INTRODUCTION

This unit deals with the models and their importance in the field of teaching. Model is used in several contexts in our daily life. A model is an exact copy of something, which gives detailed information to a person, who works on that plan.

A model of teaching is a plan or pattern that we use to design face-to-face teaching in classrooms, tutorial settings or in shaping instructional material. The use of models is very old. Socrates, the Greek Philosopher, used his own model of question-answer. In ancient India, teachers developed their own models of teaching of desirable changes in the behaviour of the learner. The reader can attain clear concepts about models of teaching. Need for these models are explained in a comprehensive way. There are four families of models of teaching. Two of them are given in detail to help the reader to understand that how a student becomes knowledgeable to his environment. Models of different authors make the reader knowledgeable and know the importance of these models of teaching. It also presents a rich variety of approaches to teach methods with enough illustrations to make a model for real learning situation.

OBJECTIVES

After an intensive study of this unit you will be able to:
1. define teaching, model and model of teaching.
2. list down the characteristics of model of teaching.
3. describe functions of models of teaching.
4. describe models of famous authors.
5. explain advantages of BTES academic learning time model.
1. MODELS OF TEACHING

There has been a lot of confusion regarding the concept of teaching and how teaching should be defined. Even in more complex situations called the classroom, a clear and precise definition of teaching cannot be given. According to Bare (1961) Teaching means many different things: and that the teaching act varies from person to person and from situation to situation”.

“Teaching is the art of assisting another person to learn. It includes provision of information (instruction) about appropriate situation, conditions or 'activities designed to facilitate learning”. (English & English -1958)

“Teaching is an interaction between teacher and student, under the teacher's responsibility in order to bring about expected change in student's behavior”.

“Teaching is an activity which is designed and performed for multiple objectives, in terms of changes in pupil's behavior”. (Mujeeb-ul-Hasan Siddiqi 1991)

1.1 Concept of Model
Models are mainly representations, copies or images of real objects. They can be used to represent objectives, systems, concepts or ideas, (Harry Dhand 1990)

“Models refer, to a set of basic assumptions that-outline the universe of scientific inquiry specifying both the concepts regarded as legitimate and the methods to be used in collecting and interpreting data”. (Bhattacharaya-1993)

The model is a pattern of something to be made or reproduced. It is a means of transferring a relationship or process from its actual setting to another one in which it can be applied more conveniently and effectively. (Mujeeb-ul-Hasan Siddiqi 1991)

1.2 Concept Model of Teaching
Model of teaching “can be defined as an instructional design: which describes the process of specifying and producing particular environmental situations, which cause the students to interact in such a way that a specific change occurs in their behaviour. (S.S. Chohan 1989).

A model of teaching is a plan or pattern that can be used to shape curricula, to design instructional material and to guide instructions in the classroom and other settings. The most important aim of any model of teaching is to improve the instructional effectiveness in an interactive atmosphere and to improve or shape the curriculum. (Mujeeb-ul-Hasan-1991)

1.3 Characteristics of a Model of Teaching
All good models of teaching have some common identifiable characteristics, which are described as follows:
1. **Scientific Procedure:** A model of teaching is not a haphazard combination of facts but on the other hand, it is a systematic procedure to modify the behaviour of learners. They are based on certain assumptions.

2. **Specification of Learning Outcomes.** All models of teaching specify the learning outcomes in detail on observable students' performance and what the students will perform, after completing an instructional sequence.

3. **Specification of Environment:** This means that, every model of teaching specifies in definite terms the environmental conditions under which a student's response should be observed.

4. **Criterion of Performance.** A model specifies the criterion of acceptable performance, which is expected from the students. A model of teaching delineates: the behavioural outcomes, which the learner would demonstrate after completing specific instructional sequence.

5. **Specification of Operations:** All models of teaching specify mechanisms that provide for students’ reaction and interaction with the environment.

### 1.4 Functions of a Model of Teaching

The reader may ask the question that why should we develop a model of teaching, what are its specific functions or how does a model, help the practicing teacher in classroom teaching-learning process.

1. **Guidance:** A model of teaching serves a useful purpose of providing in specific terms what the teacher has to do. He has a comprehensive design of instructions with him through which he can achieve the objectives of the course. Teaching becomes a scientifically controlled and goal oriented activity. Thus, a model provides guidance to the teachers as well as to students to reach the goal of instructions.

2. **Developing Curriculum:** A model of teaching helps in the development of curriculum for different classes at different levels of education.

3. **Specification of Instructional Material:** A model specifies a detailed instructional material, which a teacher can use to bring a desirable change in the personality of a learner.

4. **Improvement of Teaching:** It helps the teaching-learning process and increases effectiveness of teaching.

### 1.5 Assumptions of Models of Teaching

The models of teaching evolve on following assumptions:

1. The first assumption, underlying all models is that teaching is the creation of proper environment. The various component parts of teaching are interrelated.

2. The second assumption is that contents, skill, instructional rules, social relationship, types of activities, physical facilities and their use, all form an environmental system whose parts interact with each other to constrain the behaviour of all participants, teachers as well as students.

3. The third assumption is that different combinations of these elements create different types of environment and elicit different outcomes.
4. Fourth one is that models of teaching create an environment. They provide rough specification for environment in the classroom teaching-learning process.

1.6 Elements of a Model of Teaching
The four elements of a model are focus, syntax, social system and support system.

1. **Focus:** This central aspect refers to the reference frame around which the model is developed. It is the main theme to determine the combination and relationship of various processes, conditions and factors built in a model. Objectives of teaching and aspects of the environment generally constitute the focus of the model.

2. **Syntax:** It is the sequence of steps involved in the organization of a complete programme of teaching.

3. **Social System:** It refers to two elements: teacher role and Students, particularly hierarchal relationship and student behaviour, which is rewarded. It is an important element of every-model that specific learning’s are very much controlled by the kinds of relationship and are structured during the process of teaching. Models of teaching prescribe system for teaching of attitudes, skills' and understandings.

4. **Support of System:** This element means-to provide facilities to teacher and the students to successfully implement the strategy of teaching. For example, if we want implement individualization, we have to provide, a number of audio-visual aids, teaching mechanism and programmed text to cater to the needs of individual learner.

1.7 Need for a Model of Teaching
The theory of teaching in research on teaching is an important aspect for the teachers. It can be utilized in following ways:

1. It is a guide to formation of research hypothesis that may be tested in practical context.
2. It trains investigators to look for facts, which may not be readily apparent.
3. It accumulates research work, allowing old studies to gain support from new studies.
4. It also allows research to proceed systematically.
5. Above all it makes possible the conclusions to take shorthand form and thereby helping communicability among the researchers themselves and also between the researchers and the practitioners in teaching.

Here raises a question that why the teachers need a theory of instruction, since psychology ahead contains theories of learning and development. According to Bruner (1966) teachers do not need a descriptive theory but they need a prescriptive theory. Theories of learning and development are descriptive rather than prescriptive. They tell us what happens after the fact. A theory of instruction, in short, is concerned with how and what one wishes to teach can best be learned, with improving rather than describing learning.

The Committee on the Criteria of Teacher Effectiveness (1953) concerned itself with theories and paradigms with a view to draw notice to the necessity of more systematic
and orderly approaches to research on teaching. The tools and theories allow the research workers to bring clarity into their concepts, order in their procedure and system in their investigation.

Kerlinger (1964) says, “I appreciate the trend of building theories in education”. He further says that the development of theory should be the basic aim of research in education. Theories, he contends, have wider applicability and usefulness than non-theoretical findings.

The need for theory of instruction may be summarized as follows:

i) A theory of teaching helps to clarify the description of the teaching situation in ordinary language.

ii) It summarizes existing knowledge.

iii) It mediates application of our knowledge of teaching to a new situation.

iv) It leads to fruitful lines of experimental inquiry.

1.8 The Nature of a Model of Teaching

According to the Association for Supervision and Curriculum Development, NEA, Commission on Instructional Theory (1968), the term theory is used in teaching as “it is used in the natural-science to represent a set of interrelated generalisations derived from data, which permits some degree of prediction or control over the phenomena to which they pertain”.

In this monograph the word “teaching” refers mainly to the activity, which takes place during schooling and within classroom setting. The term includes both material variables and human variables. It refers to the interaction between teacher, pupils and situational elements.

Bruner (1966) says that a theory of instruction is prescriptive in the sense that it sets for the rules concerning, the most effective way of achieving knowledge or skill. By the same token, it provides a yardstick for criticising or evaluating any particular way of teaching or learning.

“A theory of instruction is a normative theory. It sets up criteria and states the conditions for meeting them. The criteria must have a high degree of generality”.

Bruner (1968) further elaborates the prescriptive and normative characteristics of theory of instruction in the following words: “Such a theory has the aim of achieving particular ends and producing them in ways that we speak of as options. It is not a description on what has happened, when learning has taken place. It is something, which is normative, which gives you something to shoot at and, which in the end must state something about what you do when you put instructions together in the form of a course”.

Travers (1966) classifies the major independent variables of his model into four main classes:

• Pupil variables
• Pupil task variables
• Teacher variables
• Teacher task variables

Bruner (1968) has proposed that there are four aspects of such a theory:
• Predisposition
• Structures
• Sequences
• Consequences

First, a theory of instructions should concern itself with the factors that predispose a child to learn effectively. These factors relate to his earliest childhood experiences and these precede the child's entry into our scholastic care.

The second aspect is that it should concern itself with the optimal structuring of knowledge. By this, he means that for any body of knowledge there is a minimal set of propositions or statements or images from which one can best-generate the rest of what exists within that field.

The third aspect deals with the optimal sequence that is required for learning. In what order do we present things? What exercises do you give to the student to strengthen the views of his own thinking? What type of representation do you use? How much particular? How much generality?

The fourth and final aspect of a theory of instructions should concern itself with the nature and pacing of rewards and punishments and successes and failures.

1.9 Approaches in Building Models of Teaching

Basically there are five approaches in building a theory of teaching. These five approaches can be grouped into categories: quantitative and qualitative.

Quantitative: The look at the relationship between observable teacher behaviour and student achievement.
Qualitative: Is a descriptive way, which seeks to understand the reason why teaching is the way it is.

The quantitative approaches are:
• The process product approach
• The aptitude-treatment interaction approach
• The carol model

The Process Product Approach: By this approach the relationship between teacher behaviour and the average amount of learning is found, which is accomplished by a group. A typical process product type would count the frequency with which specific
teacher behaviour occurred in many classrooms over a fixed period of time. Then the frequency of teacher behaviour would be statistically correlated with average student achievement scores to determine the cause and effect of relationships.

The Aptitude-Treatment-Interaction Approach is concerned identifying particular instructional methods that are well suited to particular students. The guiding question of this type of a model is “which teaching method is best for which kinds of students”.

The Carol Model focuses on “time” as the most important factor in student achievement. This type of teaching investigates the ways for teachers to optimize the amount of time mat students spend on learning tasks.

Qualitative Approaches:
- Cognitive Information Processing
- Ethnography

Cognitive Information Processing approach deals with the basic psychological processes that organize and direct teacher behavior.

Ethnography, which has its roots in anthropology, looks at a whole social system. Ethnographers frequently participate in the social system they are studying.

1.10 Social Families of Models of Teaching
Joyce and Weil (1992) developed more than 20 models. They organized the alternative models of teaching into four families. These are information, processing, personal, and social and behavioural.

1.11 Information Processing Family of Models of Teaching
The teaching models of this family are concerned with the organization, presentation verbal and non-verbal symbols in a way that help in the formation of concept and solution problem and development of social relationship and integrated personality. The important models of this family are as follows:

i. **Instructional Thinking Model of Hilda Taba:** It proposes to process the information through inductive process.

ii. **Scientific Inquiry Model of J. Schwab:** It is designed to teach; the method employed by the subject for solving scientific and social problems.

iii. **Concept Attainment Model of J. Bruner:** It proposes to develop concept inductive reasoning i.e. developing a concept after presenting its examples and non-examples.

iv. **Advance Organizer Model of David Ausubel:** It proposes to increase the capacity of learner to absorb and relate bodies of knowledge.

v. **Cognitive Growth Model of Jean Piaget:** It has been designed to increase general intellectual ability especially logical reasoning.

vi. **Memory Model of Henry Lorayne:** It is designed to increase the capacity to memorise concepts, facts, etc.
1.12 Social Family of Models of Teaching

The models of this family are concerned with the social relationship of the individual with others in the society. These models aim at the development of social relationship, democratic processes and work productivity in the society. They are also concerned with the development of mind and the learning of academic subjects. Some of the important models of this family are as follows:

i) **Group Investigation Model of Herbert Thelen and John Dewey** It aims at the development of skills for participation in democratic social process through interaction skills and inquiry skills.

ii) **Role Playing Model of Shaftel and Shaftel** It aims at motivating students to inquire into different personal and social values.

iii) **Social Simulation Model of SerenBoocock and Harold Guitzknow** It is designed to help students to experience various social processes and to examine their own reaction to them and also acquire concept and decision making skills.

Main Points

1. Teaching is the art of assisting another to learn including provision of information, appropriate situations, conditions or activities designed to facilitate learning.
2. Model is a simplified representation of reality, which is often depicted in a diagrammatical form.
3. Model of teaching is an instructional design used to describe the specifying process and to produce particular environmental situation, which brings specific change in student's behaviour.
4. All good models bring change in behaviour and good learning outcomes.
5. Models of teaching provide guidance to the teacher and help in developing curriculum.
6. They also provide instructional material and help in improving teaching-learning process.
7. The four, sources of models are social interaction, source, information processing source, personal source and behaviour modification as a source.
8. The elements of a model are focus, syntax, social system and support system.
9. Models of teaching are needed to have guidance to the formation of research hypothesis.
10. The approaches in building models of teaching are classified as quantitative and qualitative.
11. Families of models of teaching are developed by Joyce and Weil.
12. There are four families of these models: these are information processing family, personal family, social family and behavioural family.
13. The information processing family of teaching model is concerned with organization and presentation.
14. Also a verbal, non-verbal symbols to help in concept formation, problem solving, development of social relationship and integrated personality.
15. The important models of this family are:
   a) Instructional thinking model of Hilda Taba
   b) Scientific inquiry model of J. Schwab
Description of Models
There are many models of teaching to guide the teachers in teaching process. Different authors have given different teaching models, but we start from the basic teaching model of Glaser.

2. GLASER: A BASIC TEACHING MODEL

Robert Glaser (1962) developed a basic psychological model of teaching. In this model the teaching process is divided into four components corresponding to the four major sequences of events in the instructional process.

Box A: In Box A the instructional objectives show what the students have to attain after the teacher has completed his unit of instructions.

Box B: The box B shows the behavior which indicates the students’ level before instruction begins. It refers to the students' previous level of knowledge, his intellectual ability and development, his motivational state and certain social and cultural determinants of his learning abilities.

Box C: Instructional procedure describes the teaching process itself. A teacher has to decide mostly on this procedure. Proper handling of this component will result in changes in students’ behaviour such as learning or achievement.

Box D: The box D shows performance assessment. It contains test and observation, which will determine how well students have mastered the instructional objectives. After performance assessment the feedback will be given to C or B or A or any two or all the three of A, B. and C

Some sort of adjustment may be needed in the preceding components if students' achievement is not up to the mark. In this model the teacher is not the person of central importance. With the increasing use of technological devices the model puts a greater emphasis on teacher's competence and skills than on personal art of teaching.
3. HERBART: FORMAL STEPS IN TEACHING

Herbart was a Philosopher and Psychologist, who developed an educational psychology based on the association of ideas. The original formal steps of instruction, according to Herbart, were only four:

i) Clearness
ii) Association
iii) Assimilation
iv) Application

Later on, Herbart's disciple Ziller divided the step of clearness into two steps viz. preparation and presentation to guide teachers in their efforts. The Herbartians divided a series of instructional steps that became the most widely used aspect of Herbartian teaching method. Its most popular form was in five steps:

a) Preparation
b) Presentation
c) Association
d) Assimilation
e) Application

The first task of teacher in preparation was to stir up in pupils' mind the idea upon which he wished to graft the new material in his lesson. He then presented the material, clearly and attractively, and proceeded to associate it with the ideas previously in the pupils' mind, knitting it skillfully into the existing pattern.

The next step was to examine the fresh pattern formed out of new and old ideas what was the meaning of the new appreciation mass that had been formed.

The final step was that of fixing the new material in the pupils' mind by applying it in a variety of ways in tests, classroom exercise and assignments for homework.

This sequence became a standard approach in the twentieth century for many subjects of the curriculum in primary and secondary schools in many countries. It was systematic, suitable for many different kinds of material, and was based on an easily comprehended theory of learning. In the hands of a skilful teacher it could be both thorough and intellectually exciting. The instructional sequence was associated with the “doctrine of interest”. Herbartian method is only applicable to knowledge lesson and not for skill or appreciation lesson. Lastly, Herbart emphasised more on teaching rather than learning. However, interest was as important to the progressive educationalists as to the Herbartians. “Interest”, wrote Decorly, is the sluice gate by means of it the reservoir of attention is opened and directed.
### Structure of a Basic Lesson for 45 Minutes Class

<table>
<thead>
<tr>
<th>Time in Min.</th>
<th>Main Phase</th>
<th>Sub-phase</th>
<th>Typical Performance</th>
<th>Herbertian Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Introduction</td>
<td>Statement of Aim</td>
<td>Linkage Motivation Objectives</td>
<td>Preparation</td>
</tr>
<tr>
<td>5</td>
<td>Development-1 (Examination Phase)</td>
<td>Attend Classify Label</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Review-1</td>
<td>Recall</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Development</td>
<td>Development-2 (Interpretation Phase)</td>
<td>Identify Explain Conclude</td>
<td>Comparison &amp; Abstraction</td>
</tr>
<tr>
<td></td>
<td>Review-2</td>
<td>Recall</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Development-3 (Application Phase)</td>
<td>Practice (Encouragement Correction)</td>
<td>Generalisation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Review-3</td>
<td>Recall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Consolidation</td>
<td>Revision of whole</td>
<td>Retention of whole</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For mastery</td>
<td>For mastery</td>
<td>Reinforce Challenge Assess Mastery</td>
<td>Application</td>
</tr>
<tr>
<td>45</td>
<td>Any question Next lesson</td>
<td>Any question Next lesson</td>
<td>Linkage</td>
<td></td>
</tr>
</tbody>
</table>

### Sample Form on Plan (In History)

- **Name of Institute:**
- **Subject:**
- **Class:**
- **Topic:**
- **Time:**
- **lesson Units & Sub-units:**
1. Introduction (5 minutes)
i) Objectives
   a) General Complete learning of the lesson attainment of desirable behaviours
   b) Specific To specify in behavioural terms the cognitive psycho motor and effective objectives relating to the lesson.

   ii) Aids and appliances relating to topic:

   iii) Preparation: a) Questions and other activities based on other previous knowledge to be linked with the day's lesson for motivating the students.
   b) Announcement of the lesson.

II. Presentation (25 minutes)

   Teacher’s Activity
   Matter narration
   Developmental questions
   b) BB Work
   c) Use of teaching

   Students Activity
   a) Method leading
   b) Answering questions
   b) Proper use of aids, and appliances
   c) To understand the aids and appliances lesson accurately and properly

III. Evaluation (10 minutes)

   Asking questions for testing the
   1) Assimilation of the day's lesson
   2) Providing classroom exercise
   Etc.

IV. Assignment (5 minutes)

   Assignment to be provided

4. CONCEPT ATTAINMENT MODEL

The Concept attainment model was developed by Jerome S. Bruner, Jacqueline Goodnow and George Austin in 1956. The model is developed from their study of thinking process in human being (1977). The concept attainment strategy, as model of teaching is concerned with two separate but related ideas:

- The nature of concepts themselves, and
- Thinking process used by individual to learn concepts.

Nature of Concepts

Concepts are the key building blocks for the structure of knowledge of the various academic disciplines. The theoretical significance of cognitive concept in psychological theory parallels the seminal role of valence in chemistry or energy in physics. Concepts are the distillate of sensory experiences and the vital link between external inputs and overt behaviours. They are the vehicles of thought they are the critical components of an individual's cognitive structure. According to Tennyson and Park, a concept is assumed to be a set of specific characteristics and can be referenced by a particular name or symbol. Concept learning is thus regarded as the identification of concept attributes which can be generalised to newly encountered examples and discriminate examples from non-
examples. Concepts can be thought of as information about objects, events and process that allows us to
a) Differentiate various things;
b) Know relationship between objects; and
c) Generate ideas about events, filings and processes.

Bruner analyses any concepts as having five elements: ‘
i) Name It is the term given to the category
ii) Examples They refer to instances of the concept. There are some positive and negative examples. Positive examples are the instances of the concept.
iii) Attributes These refer to the characteristics of a particular concept that help distinguish instances of the concept from non-instances. These characteristics or attributes may be relevant, irrelevant or criterion-related. Relevant attributes are common to all examples of concepts while irrelevant attributes vary among examples of a concept, but not with other examples of the same concept.
iv) Attribute Value It refers to the acceptable range for any given relevant attribute. Criterion related attributes are those relevant attributes that distinguish the concept from other superordinate or coordinate concepts.
v) The Rule It is the definition or statement specifying the special attributes of a concept. To be most facilitative for concept attainment, concept definitions should contain references to both the relevant and criterion related attributes or the concept.

Suppose there is an array of fruits in front of you, mostly apples but one or two-oranges and a pear, each fruit is an example for instance. If my concept is apple the pear and oranges are negative instances and the apples are positive instances. Each example can be described in terms of the basic characteristic. In the case of fruit, these are colour, size, weight, shape and cost. These basic characteristics are called attributes and each attribute has an attribute value. The term attribute value refers to the specific content of that category. Most attributes have a range of acceptable values. The attribute value for an apple is ranged from red to yellow. Purple is out of the acceptable value range of the concept “apple”.

Now, the names of the concepts, particularly attributes and examples, play important roles in, student thought process, directed to concept attainment.

Bruner and the associates identify regularities in students’ decision making processes that they label thinking strategies. On the basis of their research they have developed concept attainment teaching strategies of two types:
i) Selection Strategy: Here teacher presents unlabelled examples of the concept and the student chooses concept instances. The selection strategies place responsibility for concept attainment and attribute tracking in the hands of the students.
ii) Reception Strategies: The teacher presents example of the concept that are labelled ‘yes’ or ‘no’ and students hypothesise the concept and accept or reject the example.

The Concept Attainment Mode developed by Bruner and his associates has three variations:
a) **Reception model** is mere direct in the elements of a concept and their use in concept attainment.

b) **Selection model** permits students to apply this awareness of conceptual activity in a more active context, one that permits their own initiation and control.

c) **Unorganized material model**: The analysis of concepts in unorganized data transfers concepts theory and attainment activity to a real life setting.

**Illustration of the Model (From the Reception Strategy)**
A primary school teacher decides to teach a concept 'domestic animals' to 5th graders. He or she begins the activity by saying that he or she has a category in mind and he or she is going to present certain examples that fit into the category and certain non-examples that do not fit into the category. The positive examples are denoted by ‘yes’ and negative examples are denoted by ‘no’. Then the teacher writes on the blackboard the following examples and asks the pupils to determine the category.

**Example-1:**

<table>
<thead>
<tr>
<th>Example-1</th>
<th>Cow</th>
<th>‘Yes’</th>
<th>‘No’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>ST A</td>
<td>It is an animal that gives us milk.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ST B</td>
<td>Whose meat is not eaten by Hindus.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ST C</td>
<td>An animal, which is worshipped by Hindus.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ST D</td>
<td>An animal that people keep in their houses.</td>
<td></td>
</tr>
</tbody>
</table>

**Example-2:**

<table>
<thead>
<tr>
<th>Example-2</th>
<th>Goat</th>
<th>‘Yes’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>ST E</td>
<td>The category is an animal that gives milk. The example of goat has now forced the learners to eliminate the earlier two hypotheses - the animal is not eaten by Hindus; and the animal, which is not worshiped by Hindus.</td>
</tr>
</tbody>
</table>

**Concept Attainment Model**

![Concept Attainment Model Diagram]

5. **PIAGET: COGNITIVE GROWTH MODEL (INCREASING THE CAPACITY TO THINK)**

Jean Piaget was a psychologist, who worked on the development of intellectual process. Based on his study, American psychologist Lawrence Kohlberg and Irving Siegel have
crafted teaching methods designed to improve intellectual development in general and moral development in particular.

Piaget's studies of intellectual development find their applications to education. His views include organization of the educational environment, curriculum content and sequence, methods of teaching and assessment. The role of a teacher is not clearly prescribed anywhere.

Piaget classified intellectual development into different stages. At any given stage one is able to perform certain kinds of thinking. The earlier stages lay the basis for future development. The stages are:

1) Sensory-motor stage (0 to 2 years)
2) Pre-conceptual stage (2 to 7 years)
   a) Pre-conceptual stage (2 to 4 years)
   b) Intuitive thought (4 to 7 years)
3) Operational Stage (7 to 16 years)
   a) concrete operational thought (7 to 11 years)
   b) format operational thought (11 to 16 years)

Principles of Learning and Teaching
1. Wordsworth summarised Piaget's ideas on teaching and learning. According to him, teaching is the creation of environment where the students' cognitive structure can emerge and change. Here the students' role is active and self-discovering. The teacher's function is to arrange for learning experience that facilitates stage relevant thinking and to organize instruction so that students can initiate the activity and discover for themselves.
2. The second principle is based on Piaget's distinction among three types of knowledge: physical, social and logical. The nature of matter (softness, hardness, etc.) gives the physical knowledge. Social knowledge comes from society in which a student lives. Logical knowledge is mostly related to mathematics and logic.
3. The last principle dealing with the role of social environment specifies the role of teacher as:
   i) Organizer of the learning environment;
   ii) Assessor of children's thinking; and
   iii) Initiator of group activities like play, games and discussion, etc.

It is clear from all the researches that a good teacher has to undertake constant and continuous assessing process. Piaget describes such a process as “method Clinique”.

Based, on the principles of clinical interview, we shall now develop the model of teaching. The model requires teachers to give tasks, observe how the students interact with the tasks, and then respond in accordance with the students' action. After making assessment, the teacher must determine the general range of development stages of the students so as to avoid inappropriate tasks being included in the curriculum.

Syntax
This model has three phases: In the first phase, the students are presented with a situation, which may be puzzling to them as they may confront them with the illogic of their thinking. However, confronting situation must be well matched to the learners', developmental stage. Also the
confronting situation should be such as to permit the students to assimilate on the strength of the prior learning but it should be new enough to require accommodation.

In phase two, the students' responses are called for and their level of reasoning is determined through probing, which generally will consist of asking for justification or offering counter suggestions. To start with, depending on the type of task, the teacher may start with question like what do you think”? Or “what do you see”? The need for probing is an attempt to obtain the correct response. If there is a correct response then the student is asked to justify the response by indicating his or her reasoning. After the reasoning is persuaded, one or more counter suggestions may be made in order to verify the soundness of a student's reasoning.

Phase three i.e. the transfer phase, has the objectives of seeing whether the student's reasoning will be similar for a related task. Here also the students are given a problem, they make judgments. The teacher requests for reasoning and offer counter suggestions.

Syntax of Developmental Model

<table>
<thead>
<tr>
<th>Phase one</th>
<th>Phase two</th>
<th>Phase three</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confrontation with Stage-relevant Task</td>
<td>Inquiry</td>
<td>Transfer</td>
</tr>
<tr>
<td>Present puzzling situation well matched to learner's developmental stage.</td>
<td>Elicit student responses, and ask for justification, offer counter suggestions, probe student's responses.</td>
<td>Present related task and probe student's reasoning, offer counter suggestions.</td>
</tr>
</tbody>
</table>

Social System
The social system can range from minimally structured to highly structured. However, a fairly structural teaching model with the teacher initiating and guiding the inquiry in a free intellectual and social atmosphere, may be more suitable.

Principles of Reaction
The teacher must create an environment where the students will feel responding spontaneously, and at the same time, he should carefully avoid cuing questions. He has to inquire into both 'correct' and 'incorrect' responses. He should also inquire constantly students thinking with counter suggestions, until he or she is satisfied that the students have attained the particular level of reasoning.

Support System
It is desirable that a teacher is quite knowledgeable in developmental theory. He must also have adequate stock of relevant counter suggestions for Piagetian educational models. A rich and free social environment is essentially important to work out the students' cognitive problems. Such environment is useful for the teacher to act as a facilitator to appropriate comments at the right moment.

Application
This model is useful for both cognitive and social development. In fact, it is useful in areas confronted with illogic, for diagnosis, evaluation and for instructional purposes.
The model can be employed to ensure that a child can operate smoothly in his environment or to find out activities that will accelerate the child's cognitive growth. Kohlberg, after Piaget, identifies three major levels of moral development: Pre-conventional, conventional and post-conventional. Each level has two stages.

**Instructional and Nurturing Effects of Developmental Model**

The effects of any model can be categorised as the direct or instructional effect, which are directly achieved by leading the learner in certain directions.

a) The nurturing effects that come from experiencing the environment created by the model,
b) To bring change in the cognitive development following Piaget's model, it is necessary to affect all aspects of functioning. Thus, one aspect of cognition will nurture development in all other areas.

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**6. BTES: ACADEMIC LEARNING TIME MODEL OF CLASSROOM INSTRUCTION**

Beginning Teacher Evaluation Study (BTES) was carried out by the Far West Laboratory for Educational Research and Development in San Francisco, California, USA, in 1970s, which showed a new path in research on teacher behaviour and pupils' achievement in elementary school classrooms. The study has developed, tested and pitted into operation as the Academic Learning Time Model in Classroom Instruction. Until the 1960s, research on teaching had not received a great deal of attention. By 1975, however, a number of teams and individual research efforts had been completed or were underway. Almost all of these studies were cast in the form of process product analyses, wherein teacher behaviour and classroom characteristics were observed and subsequently related
to measures of student achievement and attitudes. Correlation was the frequently used statistics in these studies. The BTES hypothesized that the acquisition of knowledge in the classroom is best conceived as a multiyear process (Fisher and Barliner - 1977). Thus, experimental designs that reflect the process product framework often suffer from problems of ecological validity.

Simple Modification of Process Product Approach
Researchers on the BTES have proposed a simple modification of the process product approach to the study of classroom learning. The link between teacher behaviour and student achievement is the ongoing student behaviour in the classroom learning situation. This complex variable is called the Academic Learning Time (ALT). The investigation of the relations of ALT to teacher behaviour and to student achievement requires a simple flow of events that influence achievement in a particular curriculum area.

Instructional Functions in the Academic Learning Time Mode of Classroom Instruction
The Teacher behaviours that influence student learning have been conceptualized as serving five interrelated functions. These are diagnosis, prescription, presentation, monitoring and feedback. These functions are broadly of two categories: planning and interaction, and these functions occur through time, in a cyclical fashion. The major component of the ALT is the classroom allocation of time from both the teacher and student standpoints. Studying the time variable has led the BTES researchers to observe classroom allocation of time of a teacher. Typically, a teacher in the primary grade allocates 50-100 minutes a day to reading and 30-50 minutes to mathematics. From the analysis of teaching protocols taken in the classes of more and less effective teachers, it has been found that teachers become constrained by their time allocation, starting and ending lessons by clock rather, than on the basis of the cyclical functions of the ALT model. Thus, when teacher rushes students for any reason, skipping one or more functions of the model, they appear to be less effective in helping students achieve in academic areas. Immature learners cannot thrive when disjointed lessons occur within a
given instruction period. The ALT is synonymous with engagement, attention, and on-
task behaviour. Every time, a student is apparently on-task during a teacher's allocated
time for a lesson, increase in learning takes place. Even slight increase in ALT would
appear to be logically, related to increased-student acquisition of knowledge. Empirical
data from many sources is accumulating to support this position.

Main Points
1. Basic psychological teaching model was developed by Glaser (1962)
2. Four components of this model are:
   a) Instructional Objectives
   b) Entering Behaviour
   c) Instructional Procedure
   d) Performance Assessment
3. Formal Teaching Steps of Herbert are clarity, association, assimilation and
   application.
4. Most widely used instructional steps of Herbartian teaching method are
   preparation, presentation, association, assimilation and application.
5. There are three principles of teacher influence to which the interaction model
   applies.
6. Concepts are the key building blocks for the structure of knowledge of-the various
   academic disciplines.
7. This model is concerned with two ideas that are the nature of concepts themselves
   and thinking process used by individual to learn concepts.
8. Concepts are information about objects, events and process.
9. They allow us to differentiate, know relationship and generate ideas about events,
   things and process.
10. The elements of this concept are name, examples, attribute, attribute value and the
    rule.
11. Cognitive growth model of Piaget is concerned with the development of
    intellectual process.
12. His views also include organization of the educational environment, curriculum,
    content and sequence, teaching methods and assessment.
13. Piaget classified this intellectual development in sensory-motor stage, pre
    operational stage and operational stage.
14. His ideas are summarised into three principles of learning and teaching.
15. The developmental model of teaching is based on these three principles.
16. This model consists of three phases: conformation, inquiry and transfer,
17. There are some principles of reaction, which a teacher must follow while he is with
    the students.
18. By following cognitive developmental model all areas of development will be
    nurtured.
19. On the basis of BTES research, the students acquire more academic knowledge at
    primary grades in classrooms.
20. The schools and teachers have allocated more time for academic instruction.
21. The time used for lessons is continuous rather than disjointed.
22. Teachers are actively oriented rather than bound by clock as a guide for the length
    of the lesson.
23. Students are actively involved in instructional episode so that differences between the teacher's and students' allocation of time are minimized.

7. SUMMARY

Teaching is the art of assisting, another to learn. Model is a simplified representation of reality, which is often depicted in diagrammatic form. Model of teaching is an instrumental design used to produce particular environment and to bring specific change in student's behaviour. All good models of teaching provide guidance to the teacher and help in curriculum development. These models are categorized in four families. The information-processing family is concerned with organization and presentation. Social family of these models is concerned with the social relationship of an individual to the society. Different authors have given different teaching model. Basic psychological model of Glaser consists of four components: instructional objectives, entering behaviour, instructional procedure and performance assessment. Most widely used formal teaching steps of Herbart are preparation, presentation, association, assimilation and application. The concept attainment model is concerned with the nature of concepts themselves and thinking processes used by individual to learn concepts. Piaget explains the development of intellectual process of an individual by giving cognitive growth model. He includes organization of educational environment, curriculum content and sequence, teaching methods and assessment in his views. Beginning teacher evaluation study is based on acquisition of more academic knowledge of students at primary grades in the classroom.

8. SELF-ASSESSMENT QUESTIONS

Q. 1 Define model, what you mean by a model of teaching?
Q. 2 List the five main characteristics of a model of teaching?
Q. 3 Name the four main classes of independent variables given, by Travers(1966)
Q. 4 The approaches in building, a model are of two main categories. What are these?
Q. 5 There are five most popular Herbartian steps. What are those steps?
Q. 6 What are the two related ideas concept attainment model is concerned with?
Q. 7 What are the elements of concepts analysed by Bruner?
Q. 8 List down the stages of intellectual development classified by Piaget?
Q. 9 What do you mean by BTES?
Q.10 What is major component of ALT?

9. REFERENCES

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INSTRUCTION AND INSTRUCTIONAL DELIVERY

Compiled By:
Samiya Ashfaq

Reviewed By:
Dr. Sidra Rizwan
INTRODUCTION

Instruction is known as the activities of educating or instructing; activities that impart knowledge or skill, a message describing how something is to be done. In education instruction refers to the product of teaching and learning. Instruction can be defined as the whole process applied for learning to occur and for the development of the target behavior that learners are expected to have.

Instruction consists of leading the learner through a sequence of statements and restatements of a problem or body of knowledge that increase the learner’s ability to grasp, transform, and transfer what he is learning.

OBJECTIVES

After study this unit the students will be able to:
1. state the role of instruction in teaching learning process.
2. elaborate the characteristics of effective instruction.
3. discuss the instruction theory in education perspective.
4. understand how learner-centered instruction can support new ways of student learning.
5. create method of instruction with different instructional delivery techniques.
1. SIGNIFICANCE OF INSTRUCTION

Instruction is vital for education, as it is the transfer of learning from one person to another. Any time you are given directions or told how to do something you are receiving instruction.

The noun instruction is related to the word structure; both share the Latin root structus, "built." The use of the word as we know it today appeared in the early 15th century from the Old French. Today it refers to the action of teaching and the job of a teacher. It can also be used to denote the directions themselves. Consider the word's connection with structure: effective instruction is presented in an orderly, structured manner.

According to Şimşek (2011), instruction requires not only systematic guidance for learning but also a purposeful organization of experiences to help students achieve the desired change in their performances. Instruction is also known as an action taken by teachers to create a stimulating learning environment for the purpose of providing guidance along with the necessary instructional tools and carrying out activities that will facilitate learning and help develop behavior appropriate for the gains students are supposed to have (Clark and Starr 1968; Moore 2000). Instruction is also defined as procedures and activities planned for teaching (Canady and Retting 1996). As can be seen, the concept of instruction has a broad definition field.

Some are listed below:
Instruction is a combination of teaching and learning activities.

- Instruction is a whole process, it includes facilitating the learning process and guiding the pupils.
- Strategies determine the approach a teacher may take to achieve learning objectives (Saskatchewan Education 1991).
- Instruction is an effort that supporting the individual’s growth and formation (Bruner 1960).
- Act of building into the mind, knowledge of facts, relations or principles of one kind or another (Ducasse 1958). Instruction is an activity process that is helping individual’s self-actualization and self-fulfilling (Moore 2000).

Anyone can show, tell and point out something to another one. Parents tell their children what to do; doctors point out proper procedures to their patients; auto-mechanics may show how to make minor adjustments in a car. All these actions refer to the concept of teaching. At this point, we can say that everyone teaches others to do things, and so everyone is a teacher, at least in an amateur sense. There is nothing special or unique about being a teacher considering the concept of teaching. But in the professional sense, teachers not only teach in the usual sense of a word, but they also instruct. The meaning instruct is derived from the root “to build” or “to structure”. The professional teachers structure classroom environments and build series of experiences for students who have a broad range of abilities, interests, and learning needs. Whereas parents, doctors and auto mechanics teach spontaneously by telling, pointing out or showing, professional
educators must carefully design and plan for their teaching. According to Smith and Ragan (1999), the instruction is the development and delivery of information and activities that are created to facilitate attainment of intended, specific learning goals. On the side, Smith and Ragan say “teaching to refer to learning experiences that are facilitated by a human being, not a videotape, textbook or computer program, but a live teacher. Instruction, on the other hand, includes all learning experiences in which the instructional support is conveyed by teaching and other forms of meditation… it means a live teacher is not essential to all instruction.” As seen, teaching mostly needs field experience but in the professional sense, it needs instruction design. The difference starts at this point. At this point, it is not possible to ignore the concept of learning. If someone tells, shows, points out the things to someone, then someone hears, sees and notices. So, we can say, this is an interactive and some time multidirectional process.

Instruction = teaching + learning

If the instruction refers to the whole process (sum of teaching and learning processes), as a core concept it must have some features.

Some of them are as follows:
- Instruction changes the learners’ attitudes, motivation, and interests
- Instruction strengthens psychomotor, cognitive and social skills
- Instruction leads concepts, rules, and principle learning
- Instruction facilitates individual development and learning to learn skills
- Instruction develops off the learners’ and instructors’ self-evaluation skills
- Instruction recommends using information technologies
- Instruction ensures systematic approach
- Instruction gives feedbacks to curriculum
- Instruction supports the governments to achieve their official and national goals.

The Ten Elements of Effective Instruction

1. Provide the necessary conditions for optimum learning and engagement: a safe and supportive environment in which students can do what you want them to so that they learn within a meaningful, authentic context.
2. Establish and communicate clear, specific learning objectives aligned with established state and national academic and career standards.
3. Make explicit connections between present and past lessons, students’ lives, other texts or subjects, the real world, and the Big Ideas around which lessons are organized.
4. Prepare students by teaching relevant background knowledge, skills, and academic language and literacy.
5. Integrate assessment throughout the instructional process, using the data to establish initial understanding, measure progress, provide feedback, refine instruction, and prepare students for future performances; this includes students reflecting on and assessing their own performance and progress.
6. **Teach students strategies** for learning, remembering, and doing.

7. **Demystify literacy practices and performances** by modeling, providing examples, and giving clear directions as students graduate from dependence on you to responsibility for their own learning.

8. **Use different instructional methods, modes, and media** in clear and coherent ways.

9. **Ask students to generate** a range of ideas, interpretations, solutions, questions, and connections.

10. **Provide meaningful opportunities to practice, perfect, and perform** all lessons in class and at home.

2. **CHARACTERISTICS OF EFFECTIVE INSTRUCTION**

**Student-Centered Classrooms**
In student-centered classrooms, students are directly involved and invested in the discovery of their own knowledge. Through collaboration and cooperation with others, students engage in experiential learning that is authentic, holistic, and challenging. Students are empowered to use prior knowledge to construct new learning. Through the development of the metacognitive process, students reflect on their thinking. Curriculum and assessment are centered on meaningful performances in real-world contexts. As a partner in learning, teachers intentionally create organized and cohesive experiences to assist students to make connections to key concepts.

**Attributes of a Student-Centered Classrooms**
- Educators support all students in making connections to construct new learning in order to make decisions and solve problems.
- The educator facilitates opportunities for students to be meta-cognitive.
- Educators and students are partners in learning.
- Educators facilitate time for students to learn collaboratively.
- Educators use meaningful and authentic assessment in real world context.

**Teaching for Understanding**
Teaching for understanding is leading students to engage in a variety of thought-provoking activities such as explaining, finding evidence and examples, generalizing, applying, making analogies, and representing the topic in new ways. Grant Wiggins (1998) states, Understanding is not just about coverage of knowledge but about ‘un-coverage’ being introduced to new ideas and being asked to think more deeply and more carefully about facts, ideas, experiences, and theories previously encountered and learned. According to Wiske (1998), it shifts instruction from a paradigm of memorizing and practicing to one of understanding and applying. It is best accomplished through addressing classroom practices and supporting the teacher as the primary change agent.

**Attributes of Teaching for Understanding:**
- Instruction facilitates the construction of deep conceptual and procedural knowledge.
Instruction facilitates the development of representations and conceptual models.
Instruction inducts students into the discipline.
Instruction facilitates the application of new learning and understandings in new and novel situations (transfer).

**Assessment for Learning (Formative Assessment)**
Formative assessment is a process, not an assessment tool or instrument, which includes collecting information on student progress toward a learning goal. The information is used to adjust instruction and increase student learning. The assessment for learning process is not an add-on to instruction, but an integral part of instruction necessary to identify and close the learning gap for each student. Assessment for learning is used by both teachers and students. Teachers use feedback to check for student understanding during the instructional process and to make adjustments to their instruction as necessary. Students use feedback from the process to monitor their own learning and to make adjustments to their learning tactics. Formative assessment practices provide students with clear learning targets, examples and models of strong and weak work, regular descriptive feedback, and the ability to self-assess, track learning, and set goals.

**Attributes of Assessment FOR Learning**
- Educators utilize K-12 learning progressions along which students are expected to progress in a domain.
- Student learning goals are clear, focused on the intended learning, and communicated so all students understand the criteria for success.
- Instructional modifications for students are planned from carefully elicited evidence of student learning.
- Descriptive feedback identifies for students the specific knowledge and skills needed to reach learning goal(s).
- Self and peer assessment is planned and structured by educator and students in order to develop life-long learning skills.
- A collaborative classroom climate is conducive to assessment for learning.

**Rigorous and Relevant Curriculum**
A rigorous and relevant curriculum is one that is cognitively demanding and challenging to students as they apply the essential concepts and skills to real world, complex and open-ended situations. The content is not just interesting to students, but involves particular intellectual challenges. When students successfully meet these challenges, their new learning will have meaning and value in contexts beyond the curriculum unit or classroom setting. Rigor and relevance is characterized by content that is linked to a core disciplinary concept or skill and …

1) requires students to do authentic work, using methods that are specific to the discipline and applying what they know or what they are learning to solve complex problems.
2) involves the use of prior knowledge, the development of in-depth understanding, and the ability to develop and express ideas and findings through elaborated communication.
Attributes of Rigorous and Relevant Curriculum:
- Higher order thinking is performed by students during instruction.
- Deep understanding and mastery of critical disciplinary concepts and skills are demonstrated.
- Concepts and skills are applied to situations, issues, and problems in the world beyond school.

Teaching for Learner Differences
Teaching for Learner Differences is about planning for and teaching to variances among learners in the classroom to create the best learning environment possible. It is designed to ensure all students acquire the essential concepts and skills of the Iowa Core. Using data to guide instructional decision-making students are provided universal, targeted, and intensive levels of support. Teaching for Learner differences is a framework which provides processes so that all students have access to the general education curriculum. It is best accomplished through a proactive approach where student and environmental data are used to plan for, implement, and adjust for the needs of all students.

Attributes of Teaching for Learner Differences
- Instruction is focused on “big ideas”—the essential concepts and skills within the content.
- Instruction is designed and delivered to match students’ needs based on assessment data of students’ prior knowledge, readiness, individual interests and learning preference.
- Teacher provides flexibility within content, instruction and product to allow for variances in students’ acquisition and demonstration of learning.
- Teachers provide clear instruction about how to learn, making the various strategies and skills of the learning process available to all students.
- Instruction includes opportunities for students to practice and review their learning and receive feedback.
- The teacher regularly monitors each student’s progress related to the essential concepts and skills, and adjusts instruction.

Effective instructional explanations should

1. Be Adaptive
Every student comes to a classroom with his or her own reserve of prior knowledge on the subject at hand. This is part of what psychologists call the “Zone of Proximal Development” (or ZPD). It is important for an instructor, to target this zone, and not bore or overwhelm the students, because providing too little or too much explanation can actually prevent them from learning. If the student are present them with too little explanation, they may experience cognitive overload because they aren’t familiar enough with the concept at hand; if they are presented too much information, they may suffer from the “expertise reversal effect,” where they over-analyze a concept they already understand but don’t recognize because they think they’ve missed something.
From a cognitive perspective, this kind of instruction works because it neither overwhelms the student with new knowledge nor limits his or her cognitive resources with redundant information (expertise reversal effect). It falls right within the zone of proximal development.

2. **Focus on Concepts and Principles**

One argument for the non-directive approach to instruction is that students develop lasting problem-solving skills that aid them in future situations rather than learning to solve only the problem in front of them.

Consider this example: if a student brings an essay to you for editing, and there is a line that is confusing or unclear, do not say, “This is unclear” but instead, “What do you mean by this?” in order to help the student arrive at the answer. This way, the students will not only understand why the sentence in that particular essay is unclear, but why sentences like it in future essays might be unclear and how to avoid writing them.

In the same way, instead of lecturing on the difference between communism and socialism, stand back and let students create projects or presentations on the topic, forcing them to learn on their own. Independent learning allows students to apply their own unique learning style (visual, verbal, auditory, etc.) and equips them with lasting research and presentation skills.

3. **Take into Account the Student’s Individual Learning Profile**

As an educator, take note of patterns in the student’s learning process in order to customize your teaching as much as possible.

Is your student a visual learner? An auditory learner? A verbal learner? Does the student outperform others on tests but remain silent throughout class? Does the student have a knack for remembering names and dates but struggle with concepts? Do your student’s eyes glaze over when you lecture on World War II in the past tense but light up when you lecture on it in the present tense? How often does your student raise her hand when you quiz the class on their multiplication tables versus their division tables?

Consider how and what your student enjoys learning, which concepts she’s mastered and which concepts she hasn’t, and where her strengths and weaknesses lie. And, again, consider what knowledge your student brings to the classroom before you design your lesson.

3. **INSTRUCTIONAL THEORY**

Instructional theory is an identifying method that will best provide the conditions under which learning goals will most likely to be attained.
An instructional theory must recognize the:

1. Experiences which most effectively implant in the individual a predisposition toward learning.
2. Ways in which a body of knowledge should be structured so that it could be most readily grasped by the learner.
3. Most effective sequences in which to present the materials to the learner.

According to Bruner (1973) The concept of prime numbers appears to be more readily grasped when the child, through construction, discovers that certain handfuls of beans cannot be laid out in completed rows and columns. Such quantities have either to be laid out in a single file or in an incomplete row-column design in which there is always one extra or one too few to fill the pattern. These patterns, the child learns, happen to be called prime. It is easy for the child to go from this step to the recognition that a multiple table, so called, is a record sheet of quantities in completed multiple rows and columns. Here is factoring, multiplication and primes in a construction that can be visualized. If it is true that the usual course of intellectual development moves from enactive through iconic to symbolic representation of the world, it is likely that an optimum sequence will progress in the same direction.

Optimal sequences cannot be specified independently of the criterion in terms of which final learning is to be judged. A classification of such criteria will include at least the following: speed of learning; resistance to forgetting; transferability of what has been learned to new instances; form of representation in terms of which what has been learned in terms of cognitive strain imposed.

Good methods for structuring knowledge should result in simplifying, generating new propositions, and increasing the manipulation of information.

Gagné believe that learning occurs in a series of events. The learning events must be organized in a hierarchy of complexity and must correspond with deliberate instruction. The significance of the hierarchy is to identify prerequisites that need to be completed at each level. Each learning objective must be accomplished before effective learning of the next outcome can begin. Essentially- you must learn how to speak before you can sing.

The Nine Events of Instruction, in order of Gagné’s hierarchical structure:

1. **Gaining attention**: Before the learners can start to process any new information, the instructor must gain the attention of the learners.
2. **Informing learners of objectives**: The instructor tells the learner what they will be able to accomplish because of the instruction.
3. **Stimulating recall of prior learning**: A recall of existing relevant knowledge.
4. **Presenting the stimulus**: The content is presented.
5. **Providing learning guidance**: Understanding and encoding begins because the instructor presents the content with an emphasis on organization and relevance.
6. **Eliciting performance**: Learners are asked to demonstrate learning.
7. **Providing feedback**: The instructor gives informative feedback on the learners’ performance.
8. **Assessing performance**: Additional learner performance is required and feedback is given again to reinforce learning.
9. **Enhancing retention and transfer**: The learner applies the instruction to practical applications to show capabilities.

**Universal Methods of Instruction**
M. David Merrill has proposed that there is a set of five prescriptive instructional principles (“First Principles”) that enhance the quality of instruction across all situations (Merrill, 2007, 2009). Those principles have to do with task-centeredness, activation, demonstration, application, and integration. Briefly, they are as follows:

**Task-Centered Principle**
- Instruction should use a task-centered instructional strategy.
- Instruction should use a progression of increasingly complex whole tasks.

**Demonstration Principle**
- Instruction should provide a demonstration of the skill consistent with the type of component skill: kinds-of, how-to, and what-happens.
- Instruction should provide guidance that relates the demonstration to generalities.
- Instruction should engage learners in peer-discussion and peer-demonstration.
- Instruction should allow learners to observe the demonstration through media that are appropriate to the content.

**Application Principle**
- Instruction should have the learner apply learning consistent with the type of component skill: kinds-of, how-to, and what-happens.
- Instruction should provide intrinsic or corrective feedback.
- Instruction should provide coaching, which should be gradually withdrawn to enhance application.
- Instruction should engage learners in peer-collaboration.

**Activation Principle**
- Instruction should activate relevant cognitive structures in learners by having them recall, describe, or demonstrate relevant prior knowledge or experience.
- Instruction should have learners share previous experience with each other.
- Instruction should have learners recall or acquire a structure for organizing new knowledge.

**Integration Principle**
- Instruction should integrate new knowledge into learners’ cognitive structures by having them reflect on, discuss, or defend new knowledge or skills.
• Instruction should engage learners in peer-critique.
• Instruction should have learners create, invent, or explore personal ways to use their new knowledge or skill.
• Instruction should have learners publicly demonstrate their new knowledge or skill.

While these principles might apply universally to all instructional situations (situations involving aided learning), the specific methods by which each principle is implemented must vary from one situation to another for instruction to be of high quality (Reigeluth & Carr-Chellman, 2009). For example, for “Instruction should use a task-centered instructional strategy,” the nature of the task-centered strategy may need to vary considerably from one situation to another. Similarly, for “Instruction should provide coaching,” the nature of the coaching should vary considerably from one situation to another. So let’s explore these variations, or “situationalities.”

**Situational Methods of Instruction**

Principles and methods of instruction can be described on many levels of precision (Reigeluth & Carr-Chellman, 2009). For example, on the least precise level, Merrill states that instruction should provide coaching. On a highly precise level, one could state, “when teaching a procedure, if a learner skips a step during a performance of the procedure, the learner should be reminded of the step by asking the learner a question that prompts the learner to recognize the omission.” When we provide more precision in a principle or method of instruction, we usually find that it needs to be different for different situations. Reigeluth (1999) referred to the contextual factors that influence the effects of methods as “situationalities.”

The challenge for instructional agents (and therefore instructional theorists) is to identify which situationalities are important for selecting each method. Furthermore, methods may be combined into a “package deal” that is made up of an interrelated and interdependent set of methods, in which case we need to identify which situationalities are important for selecting each “package” (set of methods). Reigeluth and Carr-Chellman (2009) propose that there are two major types of situationalities that call for fundamentally different sets of methods:

1. **Situationalities based on different approaches to instruction (means), such as:**
   i. Role play
   ii. Synectics
   iii. Mastery learning
   iv. Direct instruction
   v. Discussion
   vi. Conflict resolution
   vii. Peer learning
   viii. Experiential learning
   ix. Problem-based learning
   x. Simulation-based learning

2. **Situationalities based on different learning outcomes (ends), such as:**
   i. Knowledge
ii. Comprehension
iii. Application
iv. Analysis
v. Synthesis
vi. Evaluation
vii. Affective development
viii. Integrated learning

4. TEACHER-DIRECTED INSTRUCTION

When did you learn about the color wheel and how to make the secondary colors of purple, green, and orange from the primary colors of red, yellow, and blue? If you were like most people, you were probably in elementary school. But do you remember how you learned to make the secondary colors? Did your teacher tell you how, or did you get to experiment until you figured out how to do it on your own?

If your teacher told you how to make the secondary colors, then he or she was using **direct instruction**, which is when a teacher gives the information or step-by-step instructions directly to the students. The teacher would have told you that blue plus red makes purple, blue plus yellow makes green, and yellow plus red makes orange. Then, maybe you were given some paint in the primary colors, and you were able to try it out and mix the colors as directed to see that those combinations really do work.

Direct instruction is the most common type of instruction that teachers use. It is any time that the teacher is directing the students' learning. The role of a teacher during direct instruction is that of a controller, organizer, and expert. Supporters of direct instruction point to the fact that it helps students develop their **deductive reasoning**, which is reasoning from the general to the specific. When using direct instruction, a teacher presents a general principle or rule, like how to add. Then, she has students work with specific examples to see that principle in action.

Additional examples of direct instruction could include a teacher showing an instructional video about dinosaurs or demonstrating how to bake a cake.

**Classroom Arrangement**

Teachers can also arrange their classroom for a teacher-centered activity. All students should face the teacher. Each student must have access to the learning materials, including the whiteboard, Smart Board, or projector screen. Additionally, the teacher must be able to easily circulate around the room to monitor the progress of students and offer additional assistance when necessary. Seating assignments should accommodate individual student needs, such as hearing, vision, or attention issues. In contrast, student-centered classrooms are generally arranged in groups or pairs to promote collaborative learning.
The shift from teacher-centered to student-centered learning

In actuality, the shift from the teacher-centered learning to the student-centered learning has become obvious. In this respect, it is important to understand causes of the shift toward the student-centered learning in order to define clearly the major directions in the development of the student-centered learning. Basically, the teacher-centered learning was grounded on the position of educators as the highest authority. The main function of a teacher was to teach students, to provide them with information, to help them to learn the learning material and to acquire certain set of knowledge along with basic skills and abilities the education aims at.

However, today, such an approach to learning is out-of-date and it does not work effectively anymore. To put it more precisely, the modern technology and science keep progressing at the unparalleled pace. In such a situation, the provision of students with a rigid set of knowledge has little positive effects on the further professional and personal life of students because the rigid set of knowledge becomes out-of-date fast and by the end of the school or college, students need to start learning on and on to keep pace with the rapidly changing technology and science. In such rapidly changing environment, students need to be able to find effective approaches to learning to be able to learn autonomously of educators.

In this respect, it is important to lay emphasis on the fact that each student is unique and educators should shift toward the student-centered learning, where educators perform the role of a guide, who helps students to develop basic skills and abilities and to acquire knowledge students need in their regular life as well as in their future professional career. Specialists (Doll, 2001) stand on the ground that the student-centered learning increases the effectiveness of learning because educators find the individual approach to each student. This means that educators learn the cultural background of students, their psychological peculiarities, individual characteristics, their academic successes and current level of development. In such a way, using the aforementioned information, teachers can apply the student-centered learning to meet needs and wants of each student and to prepare him or her to the effective learning.
5. STUDENT-DIRECTED AND COMPUTER-BASED INSTRUCTION

Think again about mixing primary colors to make secondary colors. If, instead of telling you how to make the colors up front, your teacher let you experiment to figure it out on your own, then he or she was using discovery instruction. **Discovery instruction** is when students discover information or a process for themselves through experimentation with little to no help from the teacher. Your teacher might have given you paint in the primary colors and then asked you to paint a picture of purple, green, and orange flowers. He or she would probably have also hinted that you had all the tools you needed to complete your goal. Then, after playing for a while, you might have noticed that when two of the paints touch each other, they create a whole new color. After experimenting, you would have discovered on your own that blue plus red makes purple, blue plus yellow makes green, and yellow plus red makes orange. Discovery instruction is when there is a high level of student involvement in observing, investigating, and drawing conclusions. It takes advantage of students' interest and curiosity, often encouraging them to generate alternatives or solve problems.

**Interactive instruction** relies heavily on discussion and sharing among participants. The interactive instruction strategy allows for a range of groupings and interactive methods. These may include total class discussions, small group discussions or projects, or student pairs or triads working on assignments together.

**Experiential learning** is inductive, learner centered, and activity oriented. The emphasis in experiential learning is on the process of learning and not on the product. Personalized reflection about an experience and the formulation of plans to apply learnings to other contexts are critical factors in effective experiential learning. Experiential learning greatly increases understanding and retention in comparison to methods that solely involve listening, reading, or even viewing (McNeil & Wiles, 1990). Students are usually more motivated when they actively participate and teach one another by describing what they are doing.

**Independent study** refers to the range of instructional methods which are purposefully provided to foster the development of individual student initiative, self-reliance, and self-improvement. Independent study can also include learning in partnership with another individual or as part of a small group. It is important that the instructor make sure that learners have the necessary skills in order to accomplish the task. Independent study is very flexible. It can be used as the major instructional strategy with the whole class, in combination with other strategies, or it can be used with one or more individuals while another strategy is used with the rest of the class.
Instructional Methods
Methods are used by teachers to create learning environments and to specify the nature of the activity in which the teacher and learner will be involved during the lesson. While particular methods are often associated with certain strategies, some methods may be found within a variety of strategies.

New Roles for Teachers
The teacher’s role has changed dramatically in the new paradigm of instruction from the “sage on the stage” to the “guide on the side.” There are three major roles involved in being a guide. First, the teacher is a designer of student work (Schlechty, 2002). The student work includes that which is done in both the task space and the instructional space. Second, the teacher is a facilitator of the learning process. This includes helping to develop a personal learning plan, coaching or scaffolding the student’s learning when appropriate, facilitating discussion and reflection, and arranging availability of various human and material resources. Third, and perhaps most important in the public education
sector, the teacher is a caring mentor, a person who is concerned with the full, well-rounded development of the student.

Teacher as designer, facilitator, and mentor are only three of the most important new roles that teachers serve, but not all teachers need to perform all the roles.

**New Roles for Students**
First, learning is an active process. The student must exert effort to learn. The teacher cannot do it for the student. This is why Schlechty (2002) characterizes the new paradigm as one in which the student is the worker, not the teacher, and that the teacher is the designer of the student’s work.

Second, to prepare the student for lifelong learning, the teacher helps each student to become a self-directed and self-motivated learner. Students are self-motivated to learn from when they are born to when they first go to school. The industrial-age paradigm systematically destroys that self-motivation by removing all self-direction and giving students boring work that is not relevant to their lives. In contrast, the post-industrial system is designed to nurture self-motivation through self-direction and active learning in the context of relevant, interesting tasks. Student motivation is key to educational productivity and helping students to realize their potential. It also greatly reduces discipline problems, drug use, and much more.

Third, it is often said that the best way to learn something is to teach it. Students are perhaps the most under-utilized resource in our school systems. Furthermore, someone who has just learned something is often better at helping someone else learn it than is someone who learned it long ago. In addition to older students teaching slightly younger ones, peers can learn from each other in collaborative projects, and they can also serve as peer tutors.

Therefore, new student roles include student as worker, self-directed learner, and teacher.

**Teacher vs. Learner-Centered Instruction**

<table>
<thead>
<tr>
<th>Teacher-Centered</th>
<th>Learner-Centered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus is on instructor</td>
<td>Focus is on both students and instructor</td>
</tr>
<tr>
<td>Focus is on language forms and structures (what the instructor knows about the language)</td>
<td>Focus is on language use in typical situations (how students will use the language)</td>
</tr>
<tr>
<td>Instructor talks; students listen</td>
<td>Instructor models; students interact with instructor and one another</td>
</tr>
<tr>
<td>Students work alone</td>
<td>Students work in pairs, in groups, or alone depending on the purpose of the activity</td>
</tr>
<tr>
<td>Instructor monitors and corrects every student utterance</td>
<td>Students talk without constant instructor monitoring; instructor provides feedback/correction when questions arise</td>
</tr>
<tr>
<td>Instructor answers students’ questions about language</td>
<td>Students answer each other’s questions, using instructor as an information resource</td>
</tr>
<tr>
<td>Instructor chooses topics</td>
<td>Students have some choice of topics</td>
</tr>
<tr>
<td>Instructor evaluates student learning</td>
<td>Students evaluate their own learning; instructor also evaluates</td>
</tr>
<tr>
<td>Classroom is quiet</td>
<td>Classroom is often noisy and busy</td>
</tr>
</tbody>
</table>

6. INSTRUCTIONAL DELIVERY TECHNIQUES

Selection of instructional strategies in the instructional space is primarily based on the type of learning (ends of instruction) involved. For memorization, drill and practice is most effective (Salisbury, 1990), including chunking, repetition, prompting, and mnemonics. For application (skills), tutorials with generality, examples, practice, and immediate feedback are most effective (Merrill, 1983; Romiszowski, 2009). For conceptual understanding, connecting new concepts to existing concepts in student’s cognitive structures requires the use of such methods as analogies, context (advance organizers), comparison and contrast, analysis of parts and kinds, and various other techniques based on the dimensions of understanding required (Reigeluth, 1983). For theoretical understanding, causal relationships are best learned through exploring causes (explanation), effects (prediction), and solutions (problem solving); and natural processes are best learned through description of the sequence of events in the natural process (Reigeluth & Schwartz, 1989). These sorts of instructional strategies have been well researched for their effectiveness, efficiency, and appeal. And they are often best implemented through computer-based tutorials, simulations, and games. Some come instructional delivery techniques are as under:

**Demonstration**

The demonstration is an instructional strategy which explains by concrete means a concept, a fact, or problem. These sort of activities may involve the use of living specimens, models, objects, charts, slides, pictures and/or pieces of equipment.

**Discovery**

This method calls for teaching strategies that establish conditions, which make discovery possible. The student is provided with freedom and resources to find things out for him or her rather than having them explained to him by the teacher. The discovery method employs controlled procedures to lead to predicted results.
Gaming
The simulation of economic, historical, political and social problems and issues through the playing of realistic games is another method of involving the student in the teaching-learning process. Realism, authentic simulation, decision-making, and derivation of generalizations are key concepts in gaming. Gaming requires decision-making, so vital to the realities of the content of the social disciplines. A game, however, must be an integral part of the subject matter; it is not an end in itself. It is not just a good-times adventure, a play or a substitute for thinking.

Inquiry
A method by which a student, alone or working with others attempts to solve problems and develops concepts and skills by observing, stating the problems, hypothesizing, testing the hypothesis, and concluding or generalizing.

Lecture
The lecture method refers to the clarification or explanation of a major idea. It is a form of exposition, which makes extensive use of narrative and description. Lecturing is often considered the most effective and efficient method of presenting the same information to a large group of students. This method requires the teacher to do the talking (telling) and the students to do the listening.

Recitation
The recitation method requires an interaction between the students and the teacher. It is a method, which requires preparation on the part of all involved. This strategy allows the teacher to raise questions which keep the students actively involved in interpretation, criticism, supplementation and application of the material previously studied. Recitation is viewed as a means to promote critical, creative, reflective, and analytical thinking on the part of the students.

Role-playing
This strategy places students in a situation where they must see and defend a viewpoint different from their own. Role-playing can be combined with problem stories, problem pictures, and dramatization to make effective social situations in which students develop values and understandings.

Simulation
In simulations, a real environment is reproduced as accurately as possible. This type of instruction provides the students with experiences within the framework of the school which they will, at some time, be exposed to in the real world. It is particularly useful in teaching vocational courses and the social sciences.

Socio-drama
The socio-drama is a type of role-playing which deals with social problems. Only the general plot of a socio-drama is preplanned. The actors experience the situation they are
role-playing in the very creative sense in that they make up the plot as they go along. In this situation, students bring past experiences to a new problem.

**Summary**

- Instruction is a provisional state that has as its object to make the learner of problem-solver self-sufficient.
- Instruction must be concerned with the experiences and contexts that make the student willing and able to learn (readiness).
- Instruction must be structured so that it can be easily grasped by the student (spiral organization).
- Instruction should be designed to facilitate extrapolation and or fill in the gaps (going beyond the information given).
- As an instructor, it’s important to understand how instruction and learning objectives can be deliberately designed for effective learning. It is evident that the Theory of Instruction provides relevant and useful information for doing just that.
- The instructor must correct the learner in a fashion that eventually makes it possible for the learner to take over the corrective function himself. Otherwise the result of instruction is to create a form of mastery that is contingent upon the perpetual presence of the teacher.

**Activity**

Instruction helps to involve the learners in active learning. If we divide the level of learner involvement in three types then read the methods and techniques of instruction and instructional delivery provided in unit and complete the table:

<table>
<thead>
<tr>
<th>Low involvement</th>
<th>Medium involvement</th>
<th>High involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>Group discussion</td>
<td>Role play</td>
</tr>
<tr>
<td>Panel discussion</td>
<td>Structured overview</td>
<td>Debates</td>
</tr>
</tbody>
</table>

**Choose the Best Option**

1. Which of the following learning activities would be best for a low-achieving student with an external locus of control?
   - Lecture
   - Inquiry-based
• Collaborative learning
• Small group instruction

2. The learning environment does NOT include _____.
• the physical arrangement of the desks
• the classroom decorations
• the number of books on the shelves
• the general atmosphere, or 'feeling' of the class

3. What age group is best suited to learner-centered teaching?
• Early childhood
• Elementary school
• High school
• All ages

4. Which is not the focal point of triangular process of teaching
• Teaching method
• Teacher
• Pupil
• Contents

5. Which of the following best describes the term external locus of control?
• Success comes from luck.
• Success comes from hard work.
• Success comes from within.
• Success comes from the development of critical thinking skills.

6. Students are passive in
• Project method
• Discovery method
• Lecture method
• Inquiry method

7. Symposium is a type of
• Discovery method
• Discussion method
• Lecture method
• Demonstration method

8. We move from specific to general in
• Inductive method
• Deductive method
• Drill method
9. Practice is made in
   - Inductive method
   - Deductive method
   - Drill method
   - Discussion method

10. The Socratic method is known as
    - Lecture demonstration method
    - Discussion method
    - Inquiry method
    - Question-Answer method

11. Which is not true about projects
     - It is a purposeful activity
     - It is proceeded in social environment
     - It is accomplished in real life
     - It is teacher centered activity

12. Which of the following are considered as synonyms in Instructional Psychology?
    - Teacher & Student
    - Course & Evaluation
    - Teaching & Instruction
    - None of the above

13. Learning is to make ______________ change in the behavior.
    - Education
    - Skills
    - Experience
    - Capacity/Ability

14. Which approach is suggested by Bruner’s discovery learning?
    - Expository
    - Research
    - Discovery Approach
    - Above all

15. What of the following is the main contribution by Robert Gagne?
    - Summary of Learning
    - Learning Condition or Situations
    - Learning Processes
    - Classification of summary of Learning
7. **SELF-ASSESSMENT QUESTIONS**

1. Enlist the characteristics of effective instruction with at least 5 definitions.
2. Different between teacher and learner centered instruction method as old and new method for mastery learning.
3. As a teacher which instruction method you mostly use and why?
4. What is meant by instructional theory? In your point of view how it is helpful for a teacher in his classroom teaching.
5. Instructional delivery techniques are useful for both students directed and teachers directed instruction. Justify.
6. Compare and contrast the teacher directed instruction and student directed instructions.

8. **REFERENCE**

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Instructional Planning & Delivery 


INSTRUCTIONAL STRATEGIES

Compiled By:
S. M. Shahid

Reviewed By:
Dr. Sidra Rizwan
# CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Class Instruction Strategies</td>
<td>176</td>
</tr>
<tr>
<td>2</td>
<td>Group Instruction Strategies</td>
<td>181</td>
</tr>
<tr>
<td>3</td>
<td>Individualized Instruction Strategies</td>
<td>187</td>
</tr>
<tr>
<td>4</td>
<td>ICT and Instructional Strategies</td>
<td>201</td>
</tr>
<tr>
<td>5</td>
<td>Instructional Strategies for Non-Formal Education</td>
<td>204</td>
</tr>
<tr>
<td>6</td>
<td>Summary</td>
<td>210</td>
</tr>
<tr>
<td>7</td>
<td>Self-Assessment Questions</td>
<td>211</td>
</tr>
<tr>
<td>8</td>
<td>References</td>
<td>212</td>
</tr>
</tbody>
</table>
INTRODUCTION

Teachers are blessed persons as they got an opportunity to shape the minds, attitudes and personalities of human beings, the prime creature of Almighty Allah. Therefore in this way a teacher assists the Lord.

In recent years, there has been an increased concern among practitioners and educational research about practicality and effectiveness of instruction. The “HOW” of instruction is now being given as much significance as the “WHAT” and the “WHY” in academic circles?

The Unit in is organized by addressing class, group and individualized instruction strategies. In the text, you will find the meaning of each of the instructional strategy along with its background.

Here instructional strategies are focused, by reading/studying this text you will come to know the instructional strategies being suggested for different teaching styles. While preparing this Unit, an attempt has been made to provide readers, learners and teachers of education with comprehensive discussion of main aspects different instructional strategies. This Unit will serve as “Basic text” at the same time as well.

OBJECTIVES

After reading this Unit, the learner will be able to:
1. differentiate between styles of instruction.
2. explain the instructional methods of each style.
3. identify specific principles applied to each style.
4. compare the instructional methods on cost, effectiveness, merits and demerits.
5. discuss instructional strategies for non formal education.
6. integrate ICT in different instructional strategies.
1. CLASS INSTRUCTION STRATEGIES

Class instruction has always been important in every period of time. We look back into history, education was the sole right of nobles and elites of Europe and few people could receive education. When education was opened to general public, it created lots of problems for school. In our sub-continent, a Christian Priest stayed in schools for a short time. He observed that students were arranged in classes for teaching-learning session. Now we will look at the system, what does it mean and how it works?

In this system, the class is a unit of almost equally proficient students. They can benefit with a proper pace of time. Europeans adopted an inelastic approach within this system that yielded better results. Keeping in view the individual differences, the education is imparted on the basis of identical qualities of students. Learning is a social process and it preserves social values. It is the focal point of this system. In this system students are grouped in class (one) and taught in a way that they can benefit from education and also learn to respect the values. As such, a greater number of students are imparted education with common interest and qualities. Despite individual differences various aspects of personality are groomed.

Under class instruction task is a unit and one teacher teaches one subject according to curriculum. Every teacher, therefore, fulfils the requirements of education. This further fulfils and promotes students' interest in education process. Along with education, emotional aspects like sympathy, brotherhood, affection, cooperation, hardworking and competition are developed.

It leads to character building. Today, class instruction is inevitable in every respect. According to Pope Pious, "Education is a social process." And according to Michael Lee, "In fact, class is a model Social environment with a fundamental aim to make conscious attempt and effort for pupils learning.

1.1 Principles of Class Instruction
Each teaching method is based on a few principles, which make it a more fruitful activity. Here we would look at principles of class instruction.

Organization
A class organization should be done on the basis of common characteristics. In other words, we can say that pupils of similar aptitude and proficiencies should be taken.

Class Size
Reasonable number of students suits this method so that the teacher may be able to pay attention to the whole class properly.

Uniformity
Effective teaching requires a uniform social background; therefore, all students should be given equal and justified attention.
Appreciation
Due appraisal must be given to deserve students. It would promote a spirit of healthy competition.

Individual Differences
Although in this method the teacher is concerned with whole class but one must keep in mind that individual differences must be kept in view to have-good results and satisfaction of the students.

Promotion of Reaction
Since me students are at the learning stage, try to develop emotional reactions and avoid negative ones.

Additional Ingredient
A teacher should take interest in students' hobbies and activities in addition to curricular guidance.

Discipline
It affects a lot on teaching-learning process.

Style
The teacher should communicate to his class in a soft but firm tone and avoid shouting.

Punishments
Extreme punishments should be avoided. Positive reinforcement should be preferred to maintain discipline.

Expectation
Rate of learning may be higher or lower against teachers' expectations. Let the students learn; do not force too much considering that their potentials and capabilities are to grow steadily.

Privacy
The teacher must withhold all personal talks and matters of students to him and should not disclose until unavoidable. It develops intimacy among teachers and students.

Openness
Never develop enmity and hostility towards your learners. Always encourage and boost up their qualities.

1.2 Instructional Method
After learning meaning and essential principles of class teaching, now we will discuss instructional method. In this module you will find three methods:

- Demonstration
- Storytelling
A) **Demonstration**

- The word demonstration is derived from word demonstrate, which means, “show how to do”.
- Talking about abstract ideas is not easy to grasp. While concrete things get fixed up in minds of students. Thus, from “concrete to abstract” is followed in this technique.
- In this method the teacher explains the details of the experiments, which he performs before the students.
- Pupils see the apparatus and operation, help the teacher on his asking and at the end; they perform reverse demonstration by themselves, which enhances their confidence and knowledge.
- Demonstrations can prove useful if leaned through rehearsals. If demonstration fails once, repeatedly it effects badly, but successful work maintains enthusiasm and interest of learners in the task and learning.

To make this method successful the teacher must possess following qualities:
- Well planned.
- Purposeful.
- Organized.
- Relevant.
- Challenging for students.
- Mastery over what he demonstrates.
- In students access:
  - Its site.
  - Operational View
  - Clear sounds,
  - Quick and clear.
  - Students' involvement.
  - Connected with simple life situations.

Let us look at merits of this method:
- Demonstrations are economical in view of both times money.
- Psychologically sound, as students see concrete objects.
- Interests and enthusiasm are aroused.
- Useful when devices are costly.
- Creative and acquisitive instincts get satisfied.
- Useful when revision of a principle or project is desired in short time.
- Repeated when and where desired.

**Demerits**

- Generally pupils don not get a chance to do.
They only observe and remain passive.
In big class situation, it may not be possible to allow handling of demonstration devices by the pupils.

B) Story Telling Method

Dear Readers:
As you know, among the methods of teaching, there are some, which are used only at times. Such methods are important for their significance' from academic point of view.

One such technique is, “story telling”. It means teaching a topic in the form of a story. Usually the subjects like, Islamiyat, Social Studies and History are well taught through this method.

By adding events and tales, these subjects are made more charming and interesting for pupils. It attracts the children. Even carefree children also take interest. According to Khawaja Ghulam-us-Sayyedain, it is a very useful technique for initial/primary classes. By applying this method, we can make boring subjects/topics, interesting.

Salient Features
- Students feel charmed and drawn towards the stories of inventions.
- If a teacher has to introduce the principles of Archimedes, he can narrate the story of the king, who announced reward for finding purity of his golden crown without breaking into parts for analysis.
- He should narrate how Archimedes, while taking his bath in a tub, experienced his body thrust upwards by water.
- He discovered that like his body everything lost its weight in water and in that way he could find out the purity of gold in the crown.
- A teacher can use this method in hundred and one ways while teaching Radio, T.V., Telescope and similar other modern discoveries to sketch each detail.
- It motivates students towards learning
- They would move to read or take interest in adventure of the histories of scientists and religious scholars.
- This method is more suitable for elementary classes.
- A Teacher cannot use this technique as a method of teaching in general but its judicious use is allowed.

Demerits
These are fewer and are mentioned as follows:
- It is more or less, lecture method.
- The students do not take interest if it does not hold them.'
- Subjects like Literature, Social Science, Islamiyat, and Humanities can only be taught through this method.
- For grown up pupils it may be used sparingly and in lower classes can be used
extensively.

Let us learn principles of storytelling method:

- It should be used when felt necessary otherwise children are fascinated and become impractical.
- It should be short and carrying moral values. Detailed/long tales/become boring for the children.
- Keep silence in classroom.
- Teacher must be skilled and knowing how to control his tone, volume and pitch of sound.
- Story must be chosen in accordance with the age and mental level of children.
- During story session ask related questions from children to keep their involved.
- After completing story, children should be asked by teacher to revise the tale in their own words.
- Summarise important points on blackboard with the help of audience.
- Opportunities of writing and telling a story must be provided to pupils so that they may develop a habit how to express their own ideas.

C) Lecture Method

This method is next to discussion method, it is an old method and being used from the time of Socrates.

This is a lecture technique whereby teacher talks while students listen and take notes. It benefits larger groups as well. Though this method is not child centred and keeps lecturer busy and active, yet it is more common in colleges and universities.

This method is not according to the principles of teaching. The learners remain passive and there is no problem solving.

International standard time is 40 minutes for one lecture but mostly teachers take double the time, which brings boredom, anxiety, dullness and exhaustion.

This method can be used in the following ways:

- To motivate towards specific points.
- To clarify, a unit, lesson, problem.
- To revise, whatever is previously learned
- To expand the knowledge and contents.

The lecture is also a method of exposition. According to James Michael Lee, the lecture is a pedagogical method whereby the teacher formally delivers a carefully planned expository address on some particular topic or problem.

You can show its significance in above paragraph. Now we will see the merits of Lecture Method,

- It is economical.
- Saves time and covers the syllabus in short period of time.
The work of teacher becomes simple, as he has nothing to be bothered about experiment or demonstration preparations.

It can be based on the rules of education and psychology and not on scheme of textbook material.

It provides better scope for clarification and for lying stress on significant ideas.

It brings a persona contact and touch to impress or influence the pupils.

Demerits

- Does not encourage students’ activity.
- Pupils remain passive.
- Teacher/subject centered activity.
- No way to check the reactions of students.
- Teacher may be fast due to time constrains and learners do not grasp the idea.
- Average student may not be able to fix up his attention to a lecture of 40 minutes duration.
- Students may not follow lectures properly, facing difficulty to take notes.
- Teacher may cover more courses but less learning takes place.
- A lecture is frequently monotonous to the students, as after a while, very few teachers can keep interest up to the end.

Guideline

- Decide on specific topics.
- Research on the topic, if necessary.
- Prepare a lesson plan.
- Before beginning draw attention of pupils.
- Outline main points at the beginning as well as at the end.
- Periodically ask students for any questions
- Speak loudly and clearly, controlling tone volume correlating with body action and expression too.
- Make reasonable eye contact with audience.
- Do not be afraid to stay away from the lesson plan if an unrelated topic or issue arises.

2. GROUP INSTRUCTION STRATEGIES

Group instruction is based on the principle that no student is particularly different from any group or class of students. All students are equally capable and efficient. It is a balanced instruction for individuals and groups.

Thus, we may define group instruction as, “this instruction is imparted collectively to a group of students at the same time and place” so we can say that it is not specified/restricted to a single student rather it focuses on all students equally.
In modern and democratic system of education it is defined as, “this is a process whereby a group endeavors to solve a problem through mutual discussion, thinking, planning, determination and analysis”. Through co-operation and creative thinking, the members of such group achieve their goal.

Latest research findings have proved that individual attention is important and effective in teaching-learning process. Such larger groups are divided into sub-groups of 5-6, keeping in view the equality of capability, efficiency and aptitudes of students.

Every group learns and makes progress in uniform manner. This type of instruction yields both individual and collective benefits. It promotes intimacy and affection among the students. Kurts Lewin made first attempt towards group instruction in Iowa University on experimental basis. This system of education is prevalent in Pakistan.

2.1 Benefits
We may list its benefits as follows:
- Group instruction promotes social wisdom in a very natural way among students. Shy students gradually come up and develop a spirit of competition.
- Under this system, the students' strengthen undertakes the learning process through exchange of views. It promotes debating and discussion.
- Weaker/less efficient students can make up through competition and with the help of fellow students.
- It promotes social development and consciousness among the students for greater cooperation, sympathy, sacrifice, affection and loving behaviour.
- The students learn to perform social work. It builds a sense of responsibility in individuals.
- This system saves time and money. In other words within limited/lesser resources instruction is imparted to a great number of students.
- Certain disciplines like physical education, music, art, poems and stories can be well taught in groups.
- Students get opportunity to become social and develop leadership skills, too.
- In-group appreciation of students promotes their dedication, interest and devotion to work more hard.
- It promotes and develops group dynamics.
- Shortage of educational accessories can be overcome through this method. Our educational system is based on it.

2.2 Principles of Group Instruction
The success of group instruction is conditioned with proper organization based on the following principles:
Equality
While organizing a group, the competence and intelligence of students, must be well considered. They should be almost equally capable and efficient in each group.

Classification and Blending
Equality must be observed in classification of group. Every group should be a well blend of intelligent, mediocre and weak students.

Participation
In running teaching-learning process all group members should participate actively. All affairs should be run with cooperation of all students.

Evaluation
Group work must be evaluated against the set standards with both strategic i.e. formative and summative evaluation. It would help a lot towards keepings them on track.

Period of Existence
Strength of students in a group should be fixed according to the subject and nature of assignment. However, freedom of choice should be maintained.

Group Size
Size of a group should be restricted to 5-6 members otherwise it would become very difficult to pay individual attention.

Emphasis
As the method itself is competition oriented, too much emphasis should not be laid on competition.

Assignments
Different assignments should be assigned to each group, as variant activities and tasks promote a sense of collective participation and social harmony among the students.

Capability
Task assigned must be in accordance with the capabilities, need and choice of students. Discussions and debates should be encouraged. Tasks should include problems of day-to-day life.

Supervision
The responsibility of teacher does not end after assigning tasks to the students. He must be available for supervision, help and guidance without too much interference.

Appreciation
The teacher should perform his role well and encourage and appreciate his students for their performance and achievements.
2.3 Instructional Methods

1. Problem solving method

We all know that education is through the life and for the life. In our life, we face many good and bad times. There are problems in various situations. We learn solving them, without which life is incomplete. We train and educate our learners how to deal with situations, how to tackle and settle things in context to school learning.

We may define problem solving as; “A manner of dealing with that, which is problematic. A method involving clear definition of problems confronted formation of hypothetical solutions, hunch or suggestion, deliberate test of hypothesis until evidence warrants its acceptance”.

It may be defined as a planned attack upon a difficulty or perplexity for the purpose of finding a satisfactory solution. So, it is a method in which the felt hurdle to act in an educational situation is realized and an attempt is made in a conscious, planned and purposeful way to find its solution.

Location

Students should be directed to locate some problem and their interest in its solution should be aroused. Questions and discussions are a very important tool at this stage. They should take a problem as challenge and find a solution.

Explanation

Either a teacher has to explain a problem or else pupils know of it after a discussion. Student's age level and their understanding are important in determining a problem.

Collection of data

After discussion, data is to be procured. Sources are to be given by a teacher. Pupils getting data, start evaluation.

Evaluation

Only pertinent data should be included in evaluation, which should be based on careful analysis.

Tentative Solutions

All inferences are tentative in the beginning. Here a teacher's guidance is very important and his patience is also tested. He should suggest inferences and solutions in the right way without discouraging the pupils.

Verification of results

After the best conclusion has been drawn, it should be proved to be right, for acceptance. This can be achieved as below:

- By using hypothesis in new contexts;
- By further experimentation; and
- By collecting new information data through study and investigation.
Methods
There are two methods of problem solving:
1. Inductive
2. Deductive

Inductive
In this method generalizations are drawn from particulars. Principles are framed from observations and rules are made from instances or examples.

The pupils define their problem.
After analysis, relevant information is found out. Books help after study, pursuing references and visits to places etc. are some of the ways.

After collecting information, the pupils put it in order, under the guidance of their teacher.

Pupils find out the probable solutions, while the teacher remains in background. Here we may say that tentative solutions and its alternatives are developed and framed by pupils independently.

Learning the most probable solution, others are excluded.

Solutions are applied to the situation and results are checked. Repetition of this step is carried out until correct solution is found out.

Deductive
In this process, rules, principles and conclusions are applied to particular cases. Following steps are preceded:
Pupils follow it. They define the problem and formulate it.
They gather information for study later.
Principles and generalizations are reviewed to find as to which may be applicable to find a suitable solution.
Generalizations, principles or rules are applied to a case and inference is drawn that a problem falls under a particular principle.
The principle is applied to a case, if it solves the problem; otherwise the method is repeated to find the correct one.

Problem solving method do possess benefits that are listed as below:
• Pupils learn facts themselves. This is real education/ learning.
• Discovery takes place. Acting in new situation is learnt.
• Confidence to face the problem is developed.
• Defining the problem and verification of result is learnt.
• Curiosities of pupils are satisfied and devices are found out.
• Ideas are born and originality is developed.
2. **Project Method**

We may define it as, “A problematic act carried out to its completion in its natural setting”.

This method builds a unit around an activity that is carried out in education setting, might be formal or informal.

Its main aim is to accomplish a useful task in-group setting, whereby all Work is done in a cooperative manner. In this method students are given freedom to select their projects after careful thinking. Two important laws of a project are:

- Learning by Doing
- Learning by Living

New we will look at the steps of a project..

**Steps in a Project**

**Provision of a situation**

A situation is identified or arranged in which some problems are available with, interesting ingredient for the pupils.

**Selection of Objectives**

A teacher guides and facilitates his pupils in this phase too, to select and find out aims and objectives of the project being selected, keeping in mind real needs of pupils.

**Planning**

This is a very important step, so one must be careful in drawing a blueprint for a project. Planning should include a few alternatives. A discussion to exchange group ideas and views is very crucial. Suggestions must be critically examined and utilized.

**Execution**

Among group members are assigned duties in a way that all get activities of their choice and capability: No doubt, it heeds patience of contributors to make it a success. In one project many activities can be developed. They all help in knowledge growth.

**Evaluation**

Work done on project must be evaluated by themselves (student group) and supervisor (teacher) as well, to locate the follies. Self-criticism is worth training giving. In this step objectives (pre-set) of that project are the standard and performance is measured against this standard.

**Recording**

Group/individuals must maintain a full record of various steps Planning, discussions, assignment of duties, criticisms and such like other points are noted for future reference and guidance.
Qualities of a good Project
To make this method a fruitful and purposeful one it must possess following qualities:

- Clear and solid aim.
- Practicable.
- Interesting and relevant to pupils' need.
- Knowledge based to bring some development.
- Encouraging ingredient and have pupils' level.
- Clear and well defined scope.
- Economical in terms of money and time.
- Time oriented neither too short nor too long.
- Challenging.
- Attainable. (Availability of material information, tools, etc. should be kept in mind before starting work on a project)

A Project Aims to Bring a Child out of Bewilderment
After looking at qualities, now we will learn about merits and demerits of this method. Like other methods, it possesses benefits and drawbacks. So keeping in mind these aspects we can use this method in the best way.

Merits
This method is dependent upon the following laws of learning:

Demerits

- Time consuming.
- Teacher is overloaded with work.
- Teacher does forced correlation, which is much harmful.
- Syllabus of advance classes cannot be covered with this method, as it requires greater time.
- Teacher is expected to have full knowledge of all subjects, which is ideal but not practicable.
- Students gain outward ideas of subjects only.
- Text and reference materials are found with scarcity.
- Expensive, as well as fully equipped laboratory and library is required.
- Practice and drill for skill are not provided in project.
- Subject development is not in order.
- While working on one project pupils do not pay due time and attention to other subjects.

3. INDIVIDUALIZED INSTRUCTION STRATEGIES

Education and growth, both are two individual affairs, and can be well shaped only in healthy and free atmosphere. Arty form of pressure or stress stops a child's natural growth
and learning. So we recognize the child, and child-centered education is responsible to give rise to the thinking of individual freedom.

In other words that is “to consider one's level and desire”. Thus individual method provides for an individual child, facilities of instructions, keeping in view his needs, intelligence, and motivation, rate of learning, capacity and aim in life.

In short we can say that it would bring confidence, self-respect and self-reliance in children. In modern era, a child-centered education system is thought as the best. Therefore, it is needed to prefer the individual brought-up to make teaching and-training meaningful.

3.1 **Merits of Individualized Teaching**

We can list its benefits as below:

- This kind of teaching is imparted in accordance with individual conflicts of a child so it would satisfy him individually. Though an individual is a member of a society but one possesses one's own personality or individuality. For instance, two students cannot hold same position at one time; there will always be a difference even in points. So, a good teacher must keep in practice, to develop personalities at individual level.

- With the help of individualized teaching, a particular subject can be well acknowledged and, therefore, can be given due, complete/full attention to each and every aspect of that particular subject.

- Individualized teaching method builds the character and brings insight. It develops qualities of self-confidence, self-respect and self-reliance in individuals.

- This kind of instruction assists the students to develop the habit of self-study that takes them towards their natural aptitude. It becomes a natural way for them to find a particular aim.

- It evokes one's curiosity and creativity. Therefore, it satisfies natural desires or instincts. According to Froebel, “the ideas for things) are hidden inside the mind and heart of the child, which come into light” so individual attention is a source to probe hidden potential and qualities of a child, to enlighten and polish them. In return, a child (Karner) feels satisfied and solaced.

- It trains students for practical life because it lays emphasis on objectivity or practicability. His well-built confidence helps him greatly to face the hardships and to solve problems.

- It greatly affects the literature, geography, mathematics and writing ability of a learner, so it is best to teach children by applying this method. Whereas, music, art and physical education can be well taught in groups especially in primary classes. The individualized teaching is very effective and brings good results in the long run.

- If we do not teach our learners how to read, write, do or pronounce individually, it will not satisfy them and, therefore, the next educational process will be difficult for them.
• It is fruitful especially in case of weak students. It provides opportunity to express their difficulty without any hesitation whereas, in a group they cannot express well. Any absentee cannot recover missing lesson but in case of this method he may recover before new lesson is taught.
• In this method it is convenient for teacher to identify weaknesses and problems of learners and solve them accordingly. But it is not possible in a group to pay special attention to each and every individual.
• In individualized teaching, one is not stuffed or forced rather one learns according to his capacity. In this way, a learner is also responsible for his own progress or position.
• It connects teacher and learner closer. Close relationship enables teacher to guide and train his learner more appropriately.
• Teacher plays vital role in individualized teaching. At a time he performs as a guide as well as a friend. So his accountability increases to a great extent.

3.2 Principles
If we follow these principles as guidelines this method would be more fruitful and effective.
i) Individualized instruction should be in accordance with child's aptitude, interest, demand and learning rate.
ii) Educational purposes must be integrated with ethics and morals to make this method meaningful and helpful for building stronger foundations of one's own standards.
iii) It must be adopted as a stimulant or motive so that educational motivation can be propagated into our learners.
iv) A learner should get opportunities to flourish in stress-free environment. Freedom helps to mold a child's capabilities in the framework of nature.
v) It is crucial to teach fundamental skills to our learners like reading, writing, and speaking. Once he has learnt, it would facilitate him towards study, exercise, assignments, etc.
vi) A child should be provided with opportunities to experiment with what he learns. It would inculcate the habit of self-study along with developing a sense of responsibility.
vii) Teachers should guide and assist only when needed. They should eliminate the obstacles and let learner work independently so that they may grow and shape their natural abilities well.
ix) A teacher should blend individual teaching with group teaching occasionally to add a new flavour in a group where students compete with each other, learn from others mistakes and accelerate their learning pace.
ix) Co-related activities enable a child to be more confident. It is also a mean for teacher to assess one's aptitude, which is expressed in child’s activity.
x) The level and of assignments should be rational so that learners may be able do the job well and get positive feedback for their achievements as token of encouragement.
3.3 **Procedure:**
 While individualized instruction is to be practiced, the following two procedures are suggested to be kept in mind.
 i) Assignment
 ii) Study.

Here we will briefly discuss each procedure that will further be adopted to make our instructional method more comprehensive and purposeful.

i) **Assignment**
 We may define an assignment, as “An assignment is a job, a piece of work or a task accepted by an individual pupil or the class” Philosophy behind assignment method is the utilization of the merits of lecture, demonstration and laboratory work.

Sound planning of Assignments requires:
- Time, work and depth of subject matter should be prescribed
- Learning process, objectives, methods and techniques
- Age, intelligence, interest, abilities of the pupils
- Reference material and laboratory facilities
- Time allotted should clearly be explained
- Questions/task given must be relevant and clear

**Type of Assignment**
There are two types of assignments:
- Class Assignment
- Home Assignment

**Class Assignment**
Students are asked to answer the questions given, to them or they have, to perform some experiment, the teacher corrects the answer and maintains a record of progress on regular basis in his diary. Pupils are supplied with a set of instructions to be followed.

**Home Assignment**
The teacher gives a topic with list of references. The assignments are completed and returned to teacher for evaluation the teacher checks these assignments and if he finds some of them not up to the mark, he returns them for further clarification, reading and resubmission.

Assignment, may be done/assigned in the form of:
- Exercise
- Research
- Skill
- Experiment
- Projects
- Problems Solving
Now we will look at Merits of Assignment
- Related to subject under study
- Enhance understanding
- Brings satisfaction and confidence too
- Purposeful activity
- It creates curiosity, thinking and challenging
- It encourages habits of extra study and self help
- It maintains progress records of evaluations
- It is economical, as shortage of apparatus is not felt
- It is a training in scientific method

Let us look at its Demerits
- It needs more work on. the part of art already overloaded teacher
- It may suffer due to lack of reference and textbooks, etc.
- It requires up-to-date laboratory and library
- It may prove to be a bottleneck for syllabus.
- It allows weaker students to copy from others.

ii) Study
Second important component of individualized instruction, is study. It includes observation, exercise, experiment and reading the books and magazines/ ! is conditioned with one's conscious willingness, interest and motivation. Effective study not only requires ability, interest and mental health but also better and successful techniques. For effective teaching, teachers should supervise thoroughly. Only those teachers can play their role appropriately, who themselves are fond of studies.

Educationists have suggested three types of methods,
  i) Supervised Study
  ii) Non-Supervised study
  iii) Liberal/Free study

**Supervised Study**
This type requires constant supervision of a teacher or an individual.

Usually it is done in the classroom, hall or library, where a great number of students study under a teacher's guidance, it is also named Study-hall Method, and it is common in the West, not in Eastern countries. Here the golden rule of silence is practiced. This method develops study habits and manners among the pupils. They learn to study in groups as well as individually. It develops concentration.

**Non-Supervised Study**
It is the opposite of supervised study method. No textbook study is included and teachers only guide the pupils where they need. Here a pupil is directed towards a subject or topic. Learners take benefit from resource centres and practical books too,
This study greatly benefits intelligent and hard-working types of students and moves them to a vast field of knowledge.

It requires great knowledge of teacher so he may guide his pupils on a number of various topics.

**Free Study**

It is third category of study method it is usually carried out of school boundary and timings. It aims at individual efforts, interest, responsibility and persona attention. Few experts insist that it is just wastage of time of our learners, as it disturbs home activities. Therefore, it should be so planned that they may be able to do it after completing their school or home assignments. However, evening time is considered the best for its application. This study depends on teacher, curriculum and parents: so it would require participation of parents along with teachers, so pupils may get necessary Hews for study.

### 3.4 Instructional Methods

1) **Kindergarten Method**

In German language, kindergarten stands for garden for children. Basic Philosophy of this method is that children grow like plants or flowers in a garden.

Froebel along with Pistalozzi used this method. Froebel considered a school as a garden, and a teacher as a gardener, who has to look after the little human kids as plants and waters them to grow their beauty and perfection.

- Froebel believed that life is always evolving and developing. This dynamic growth is a sign of eternal unity.
- Self-activity is innate. A child's intellectual, emotional and physical growth should be developed through play/sports/games.
- He describes the connecting force as: It is different from all other forms, yet it contains all of them, it is formless yet it contains all of them, and it is formless yet the most perfect form.
- The plan works on freedom, play joy. There are no books, no formal storing of knowledge. Exercise is the key to this method. Learning takes place through activity.

So, there are three ways in which it works.

i) Songs

ii) Movements

iii) Construction

All three go as a unit. Play is pivot. Songs provide experiences. Creative activities provide expression to children. Children are trained intellectually, physically and emotionally through concrete means of activities. A teacher selects songs, plays and games. He shows pictures and arranges activities like construction.
**Songs**
Every song has three parts:
- a motto for mother or teacher
- a verse together with music.
- a picture showing the illustration of song
- A child is able to use his limbs, muscles and senses;
- Each song provides an opportunity of some nursery game;
- Songs aim at meeting the child's needs of a different kinds; and
- An activity to exercise; so it helps in education.

**Gifts and Activities**
Gifts are graded and provide some activity. Occupations are activities suggested by gifts. We can thoroughly understand that how it moves forward a child's step from, one to another stage.

**First Gift**
There are six different balls in a box. The child has to play with them by rolling them. It gives him the idea of colour, material, motion and direction.

**Second Gift**
A sphere, a cube and a cylinder are in a box. During play a child notices that cube is static, sphere is mobile and cylinder possesses both properties. It harmonises the qualities of both a cube and a sphere.

**Third Gift**
It comprises a building box, with a number of construction materials like bridge, steps, and benches.

**Fourth Gift**
A big cube divided into oblong prisms in each of which the length is twice the breadth, and breadth is twice the thickness. A child can make various kinds of building designs when combined with the third gift.

**Fifth Gift**
This gift is a big cube, divided into twenty even cubes, three of which are again divided diagonally into twos and threes into fours: By combing third, fourth and fifth gift, many beautiful shapes and designs of pattern can be made.

**Sixth Gift**
It is very important in teaching a child numbers. It is helpful to learn, making more new and different patterns. It is a big cube divided into eighteen whole and nine small oblong blocks.

**Seventh Gift**
It comprises a set of square and triangular tablets of a very fine wood made up of two
colours. It is in geometrical form and mosaic

Firstly, a demonstration of gift must be presented. Teachers must carefully select the play most suitable for child's learning. Practice should be given in plays and activities.

Second Stage of Scheme
At second stage manual work is expected. Manual work is a necessary condition for the realization of a pupil's personality.

Other subjects
According to Froebel the main aim of education is an all-round development of a child's personality. He has divided curriculum as below:
- Religion and religious instructions
- Natural sciences and mathematics
- Language
- Art and objects of art
Children would develop a sense of observation, analysis and, later on, appreciation.

II) Montessori Method
Doctor Maria Montessori was a scientist, an anthropologist, educationist and a physician. She desired to teach children through real experiences by giving them concrete material and maintaining learning situation for them.
Now we will look at her philosophy and principles, which she framed for her method of teaching the children.
- Full freedom
- Education for growth
- Education for self
- Individuality as a psychological process
- Sense training (sensations of colour, sound, weight, touch and temperature etc.)
- Motor efficiency (muscular activities)

Procedure and plan of method
i) An atmosphere of complete freedom is to be provided to the students.
ii) Supply of suitable furniture and equipment to students.
iii) The didactic sensory apparatus is provided for various types of exercises, intellectual sensory and motor.

Children's House
It is a multi-roomed school with a well laid out garden. Rooms are for lunch, normal work, laboratory, rest and bath. Rooms are equipped in accordance with the spirit and needs of this method.
Now we will discuss the activities of Montessori Method

- Exercise in practical life
- Exercise in sensory training
- Didactic exercises for language and arithmetic

Let these points be discussed briefly.

**Exercise in Practical Life**
In a children's house real activities of everyday life are carried out, in which all household is entrusted to little children. They get full training here for their future lives. They do activities like sweeping, cleaning the floors, dusting cupboards and shelves, learning how to dress-up accordingly, blowing their noses, coughing, walking, how to take their meals, offering prayers, taking gymnastic exercises, doing clay modeling, making tiles and bricks, etc.

**Exercise in Sensory Training.**
The “Didactic Apparatus” is very finely graded. It provides exercises in sensory training. Various types of apparatus are provided for perception of size, form, weight, touch, hearing and colour etc.

**Didactic Exercise for Language and Arithmetic**
Children are taught third reading, writing and arithmetic. Writing comes before reading in this method. The movements, which a child makes, are more important than what is written.

**Principles for Writing**
- Recognition of forms of letter
- Learning of phonetic songs
- Control of pen

**Reading Rules**
- Interpretation of an idea from written signs.
- Word/phrases are written on a card in bold letters
- Ask to name familiar objects
- Ask to translate the writing into sound
- Himself selects a card/slip and reads them

**Rules for Teaching Arithmetic**
- To teach numbers a long stair used
- A set of ten rods with varying length is used
- Ask to arrange rods in length
- Ask to arrange weight/diameter-wise
- Ask to arrange blue ones and red ones separately

Now we will list the advantages of System
- It lays emphasis on self-discipline
Teacher plays an important role in it
Method of teaching 3Rs is different in it
Learning by doing is the basis here
Complete-freedom is given in learning
Sensory training helps in a child's training of education
Individual attention is paid in the plan
Respect the child and his education
Scientific method in nature

Its Limitation may be listed as following:
- It places limited emphasis on play
- Self-expression does not find sufficient scope
- Sensory training is not always transferable
- Senses can be trained in isolation
- Social training is very limited
- It lacks moral and emotional development
- Too much emphasis on self-education
- Economically this system is expressive
- It requires suitably trained teachers

Thus, keeping in mind these facts and figures, we can say that it is costly and in Pakistan we are not in a position to afford it, but, on the other hand, we do accept that it plays a vital role in basic training and upbringing of children.

III) Dalton plan
Firstly, we will look at its historical background.

The Dalton plan was applied by Miss Helen Parkhurst at Dalton, Massachusetts. She, being acquainted with Montessori's method, discovered that children might be taught better if some scheme based on individual differences was introduced. Dalton's plan was, thus, the fruit of educational experiment in teaching methods in the Dalton High School by Miss Helen in 1920.

Dalton's plan is not a particular method of teaching any particular subject rather a method of organizing the work of a school to promote purposive self-activity.

It aims at solving the problems of children even when they are classified by ability. In the words of J.H. Panton, “among other things, the plan is an attempt and a highly successful one under certain circumstances, to provide an education in self-development and social cooperation of pupils”. In this plan, independence of the pupils to work at their own rate and the consultative capacity of the teacher to guide them has been stressed. The traditional curriculum is preserved but timetable is discarded. Let us look at the underlying Principles of Plan.

i) Principle of individual work
ii) Principle of freedom
iii) Principle of self-effort
iv) Principle of group interaction
v) The psychology of viewpoint.

**Features of Dalton’s Plan**
Assignments or Contracts and Checkups:
In Dalton’s Plan, work of each grade for each subject is laid-out in a series of related jobs and contracts. Teachers outline monthly contracts or weekly assignments for the whole year supplies, guide sheets and guidance for work to be done.

Assignments may be self-corrected, peer review, corrected by other teachers or are handled in pupil-teacher conference.

**Subject Teachers**
Instead of class teachers, there are subject teachers as specialist. Teachers completely handle their subjects and confine themselves to five duties:
1) To preserve an atmosphere of study in the classroom
2) To explain any detail of the assignment
3) To give information for the use of departmental equipment
4) To give suggestions with regard to the methods of attacking particular problem
5) To explain a point and its relation to the general principles of the subjects whenever need arises

**Subject Laboratories**
Instead of formal old-fashioned classrooms, there are subject laboratories each one equipped for a particular study subject to enable a child to have access to vast literature on a subject. Under Dalton scheme, the pupil, not the teacher, asks most of the questions.

**Records**
Pupils’ progress in each subject is recorded by means of graphs and diagrams. Pupil maintains two records himself and one by teacher in the subject room. This graph links the teacher and pupil to bring them closer for effective teaching and learning.

**Conferences**
Under this plan, in addition to assignments and contracts, some provision has been made for exchange of ideas in the form of conferences. These are held by teachers and last for 15 to 45 minutes. Teachers and class hold these from 45 minutes duration. Class conferences are held to discuss difficulties or overview purpose.

**Suitability for Middle and High Classes**
This system demands command of the subject before pupils work under contract. It cannot, therefore, be applied in primary classes.

**Merits of Dalton Plan**
There are many more advantages of this system, which are listed as below:
• Individualized instruction
• Continuity of work is assured
• It fosters initiatives, self-reliance and self-discipline.
• Graph records are useful
• Problems of formal class discipline much simplified.
• Better and quicker learning is possible
• Compulsory homework does not remain a necessity
• Good for low and high ability pupil

The plan has following limitations as well:
• Smaller classes and generous staffing are required to make the plan successful
• Preparation of graded assignments is also quite difficult;
• Oral work is not given adequate attention;
• Teachers must be excellent workers;
• Expensive interns of bearing specialist teachers and up-to-date quipped laboratory.

IV) Programmed Instruction
Programmed instruction emerges out of experimental researches on operant conditioning. It incorporates the principles of operant conditioning in human learning.

Chronologically, the Greek philosopher, Socrates is said to be the first programmer, who developed a programme in geometry.

In this method the material to be learned is arranged in graded units, according to levels of difficulty.

It is presented in such an order that it results in the best understanding and retention. It is based on the, “principle of reinforcement”. The really big milestone in development of programmed instruction came in mid-fifties with the work of Prof. B.F. Skinner of Harvard University. The operations involved in programmed learning instructions are as follows:

1) The subject matter is logically sequenced and broken into small steps.
2) A small bit of meaningful segment of information (frame) is presented to learner.
3) The learner reads the frame and is required to make a response to the information in writing.
4) By immediate feedback system he is informed about the correctness of his response.
5) And the learner is presented with a second frame and the stimulus response, i.e. reinforcement cycle, is repeated until the series of frames presents a complete programme.

Forms of Programme
Text-Books
Cards
Teaching Machines
Classification of Programmes
Mostly there are two varieties of programming:

- Linear
- Branching

Linear programming
It consists of strict, unchanging and carefully thought out series of questions and answers in each unit or frame. It may be presented in the following way:

In this method of programming, a pupil has to master step one before proceeding on to step two and so on. Teachers beforehand arrange these steps and pupils find it easier to learn them as compared to in other methods.

Branched Programming
S.L. Pressey and N.A. Crowder have given this process, which consists of many branches and offshoots.

The information sheet at every step guides a student. Sometimes the learner has to retrace an earlier step to ensure that he is proceeding on right lines. This technique may be presented as below:

Branched Programming

N.A. Crowder employed the technique of intrinsic programming, with multiple-choice items. In this method every mistake made by a student is further utilized to build up new knowledge and skill so mistake opens a new avenue for learning.

Now we will count merits of programmed instruction.

- The use of programmed learning material helps in the improvement of the quality of teaching.
- It may be utilized as a supplementary process along with regular textbooks.
- A teacher is helped by application of this technique.
- Apart from printed material in the form of books and cards, used under this technique, there is a device named teaching machine.
- It is different from an ordinary audio-visual device in form of a workbook, card,
film, and TV etc.

- In teaching machines, answers are fed for the benefit of learners.

Thus, it is a self-study method.

**Functions of Teaching Machine**
- It is used for individual teaching.
- It contains and delivers programmed contents in steps.
- It works as psychological reinforcement.
- The whole process is foolproof.
- Learning takes place in quicker way.
- It enables a learner to judge his own work.

**V) Computer**

In the age of “information” and computer literacy, computers have found their way into classrooms faster than most of us thought would be possible.

Computers and software are referred to as CAI (Computer Assisted Instruction) when students are directly dealt with them. Computers function as an aid to instruction.

The most common uses of CAI are: drill, practice, tutorial, simulation games and problem solving.

**Merits and Uses of Computer**
- The computer can store and retrieve information, conduct statistical analysis of data, making graphs, tables, and display them effectively.
- It assists in composing, editing, and formatting compositions, and communicating with other informational networks.
- CAI can provide individualized, self-spaced instruction with easy access to enriched exercises.
- CAI can raise student's performance in both cognitive and affective domains. As a motivational device, CAI can enhance interest levels and general attitude towards school.
- CAI can provide immediate feedback.
- CAI can be used to develop inquiry skills, problem solving skills, critical thinking and decision-making skills.
- Students can write their own programmes.
- CAI does not have human weaknesses, which may interfere with excellent teaching techniques. For example, a teacher will not take a bad day out on students; a computer is not impatient and it cannot get tired.
- Content material is easily conveyed and its learning is easily evaluated.
- CAI can be used for interviews and practice, tutorial work, exploration of a problem, simulating and gaming for providing entertainment from time to time.
Limitation
Although it has a great number of merits yet it must be kept in mind that machine does not possess any emotions or feelings, therefore, it has to be supervised to determine as to what extent the learner can benefit from it.

4. ICT AND INSTRUCTIONAL STRATEGIES

Technological innovation is essential for human development, from the printing press to the computer; people have devised tools for facilitating learning and communication. Technology is not inherently good or bad, the outcome depends on how it is used. Information and communications technology (ICT) involves innovations in microelectronics, computing (hardware and software), telecommunications and optoelectronics, micro-processors, semiconductors, fiber optics. These innovations enable the processing and storage of enormous amounts of information, along with rapid distribution of information through communication networks.

It is accepted that telecommunication is a basic infrastructure necessary for economic and social development of a country. This is even becoming stronger than ever as information related economic activities are growing. Information and communications technology may be described as the support of the central nervous system of complex societies, transmitting and processing information and commands among the various parts of such societies. Internet plays a fundamental function in ICT.

Information and communications technology carries on high promise both in human and economic terms. Benefits could be obtained in: Education, Job training, Health care, Food security, Environment management, Government efficiency and specifically in Science and Technology. Evidence has confirmed that ICT can make a significant contribution to teaching and learning across all subjects ICT can be a tool for school improvement ICT is a core skill which is essential for participation in today’s society and economy.

Direction of travel for ICT
The effective and systemic use of ICT is integral to the wider education strategy to bring about further improvements in teaching, learning and school management both in the classroom and beyond, motivating, engaging the learner, offering personal approaches to learning, unleashing creativity in learning, allowing independence in learning, developing collaborative and team working skills

ICT offers new ways of teaching the same things it enables focus on each and every child, learner styles/preferences. ICT is a tool in the armoury for tackling barriers to engagement it reduces bureaucratic burdens on teachers, saves time in lesson planning and administration and offers a more comprehensive approach to assessment.

Use ICT to support and enhance learning teaching in all subject areas (where appropriate). There is now clear evidence that ICT, when used well, improves attainment
in all subjects. Teachers are becoming increasingly aware of ICT, and may have attended some INSET, but rarely (and often reluctantly) try to use it in their classroom teaching.

**Utilization:** A teacher becomes increasingly aware of the benefits of technology, and begins to incorporate it into teaching, often “replacing” former activities with ICT alternatives. This begins to have beneficial effect on teaching and learning, although use remains fragile and the teacher is often set back, for example by technical hitches.

**Integration:** A teacher is becoming increasingly familiar with appropriate use of ICT, and can integrate it into many aspects of their ongoing teaching, teaching and learning begins to be very significantly enhanced.

**Reorientation:** The potential of ICT is now exploited to move into new areas and approaches that could not easily be replicated by more “traditional” means. Teaching and learning begins to be significantly transformed.

**Evolution:** The developmental and creative possibilities of ICT are being fully explored. ICT use can grow and develop in response to the needs of the learner and the consequent teaching implications. Teaching and learning is very significantly transformed.

**Teachers’ pedagogies and knowledge of learning styles**

How to select resources/rethink pedagogy (The answer could be Hands on Support?)

Access to and reliability of ICT resources, teachers’ knowledge of the potential of ICT. If you don’t know what ICT can do, you can’t be transformed (The answer could be Hands on Support?)

### 4.1 International and National Higher Education context

Within the international higher education context there is broad agreement that it is virtually impossible to address the growing international need for higher education opportunities only through brick and mortar solutions. Some of the drivers and the related challenges for traditional residential universities are:

a) The need for lifelong “anywhere anytime” flexible learning opportunities to address the specific needs of the knowledge economy and 21st century employment market. This also causes a shift from a homogenous (18-24 years of age) student cohort to a more diverse group of students in terms of learning needs, age, preparedness for university education and computer literacy.

b) The high cost of residential higher education, with a greater demand for advanced studies and increased competition from non-formal educational providers, necessitates more innovative, open and borderless learning opportunities.

c) The use of information and communication technologies provides the opportunity to transform traditional methodologies and approaches into flexible learning systems that could potentially:

- Address the needs of a more heterogeneous student cohort,
- Widen access to universities to make higher education less exclusive,
- Enable a paradigm shift in terms of pedagogical frameworks to not only use ICT as add-on or electronic replication of existing practice,
- Require continuous lecturer support, and
- Impact on the type of physical learning environments within higher education institutions
National policy documents also confirm these international trends and focus within the national context on the specific challenges where ICT could potentially address national education challenges:

- Increasing the low higher education participation rate and decreasing the high attrition rate,
- The provision of lifelong learning opportunities and in-service training to the so-called “learn-and-earn” students,
- The professional development of teachers, and
- The articulation between school and university

The use of ICT can also facilitate a pupil centered approach by appealing to different learning styles. The use of ICT was added to the secondary national strategy, as a way of building on perceived strengths of the primary, literacy and numeracy strategies, as well as an attempt to address perceived weaknesses of Key Stage 3 teaching and learning (DfES, 2002). In theory, by increasing the exposure of ICT within both theory and practical lessons, it should in turn increase the teaching and learning standard across the curriculum. That being said, this will only transfer into practice if the ICT resource is used effectively, and indeed facilitates the improvement of teaching and learning within the lesson.

Through utilising the use of ICT within lessons it also encourages the notion of active engagement, whereby it is deemed that pupils learn most effectively when they are interested, involved and appropriately challenged by the task. This is typically when pupils are most engaged with their learning (DfES 2004).

The use of ICT is also another method in which a teacher can vary the type of teaching and learning within their lessons, ensuring a positive learning environment is achieved. This environment will maintain motivation and enthusiasm levels, which without could lead to behavioural and classroom management problems (Capel, Whitehead and Zwozdiak-Myers, 2004). The gradual exposure to ICT is also another method by which the youth of today can become acclimatised to using ICT, in a world where its presents and necessity are ever increasing.

By selecting appropriate teaching strategies to achieve intended learning objectives and incorporating the use of ICT effectively, one can maximise the learning taking place within lessons and in turn contribute to the fulfillment of the Every Child Matters agenda (DFES, 2007) whereby pupils are encouraged to be healthy, be safe, enjoy and achieve, make a positive contribution and achieve economic wellbeing. The teaching strategies chosen must complement the learning objective, whilst insuring pupils are adequately challenged through the use of ICT, creating a pupil centered approach to teaching and learning and supporting the notion of active engagement.
5. INSTRUCTIONAL STRATEGIES FOR NON FORMAL EDUCATION

One of the basic challenges which Pakistan faces is the low rate of adult literacy, which has remained a neglected area in educational planning. The root cause of the current high illiteracy rates lies in the low rates of primary participation over the past few decades, leading to the present “backlog” of over 50 million adult illiterates in the country. The situation today, too, shows little progress:

- Of the total 18 million primary school-aged children (aged 5-9 years), 6 million children are currently out-of-school;
- Of the 6 million out-of-school children, 4.3 million (61%) are girls and 1.7 million (39%) are boys;
- The drop-out rate in primary schools is reported at 54% for girls and 45% for boys. Besides rampant poverty, with over 30% of the population living below the poverty line, there are systemic factors responsible for low primary enrolments:
  - the shortage of school facilities within close proximity;
  - absenteeism and lack of motivation among teachers;
  - irrelevant curriculum and sub-standard textbooks;
  - weak systems of monitoring and supervision; and
  - lack of community participation.

Low levels of girls’ participation can be traced to lack of access to girls’ schools especially in rural and remote areas, shortage of qualified females to serve as teachers and conservatism in the society, especially among the feudal and tribal populations. To reach the presently un-reached segments of society, the National Plan of Action (NPA) on EFA suggests the expansion of both formal and non-formal education facilities for both children and adults. It plans the establishment of new primary schools, rehabilitation of existing schools, introduction of a double shift in existing schools, upgrading of primary schools to middle level and more importantly, the expansion of the network of non-formal basic education schools and adult literacy centers. Non-formal basic education schools (NFBES) would play a key role in enhancing the present primary participation rates and reducing future illiteracy. These schools would offer the formal school primary course in areas where either regular school is non-existent or where the enrolment rates are low. Under the Education Sector Reforms (ESR), the establishment of 30,000 new NFBES has been planned for 2001-05, while another 15,000 will be opened during 2005-06. These 45,000 non-formal education schools would enroll over 900,000 out-of-school children. A total number of 270,000 adult literacy centers have also been planned under the ESR. After 2005, almost 100,000 literacy centers would be opened annually till the year 2015.

Non-formal learning is an extensively used and intensely debated notion in the education field. It stands for a range of core learning principles, methodologies and approaches in the youth sector, commonly emphasising the learner's intrinsic motivation, voluntary participation, critical thinking and democratic agency. It is widely acknowledged and
recognised that non-formal learning provides unique learning opportunities to millions of Pakistanis on daily basis.

In recent years, academic inquiry has gradually shifted to a repositioning of non-formal learning—defined in 1974 by Coombs and Ahmed as "any organized, systematic educational activity, carried on outside the framework of the formal system"—as one of multiple learning situations positioned on a learning continuum and structured across multiple dimensions between formality, non-formality and informality of learning (Chisholm 2007, Colley et al. 2003).

Political interest in the variety of learner-centered and practice-based educational processes that are subsumed under non-formal learning has increasingly been focused on quality standards, validation and strategies for recognition.

Non-formal education must break away from these constraints if it has to serve its purpose.

i) It must build into the system a flexibility which will permit the learners to move at their pace. It should be able to cater to the specialised needs of groups of learners.

ii) Its syllabus must be flexible and need based. Need may be seen from the angle of both the consumer as well as the planner. The felt needs of the consumer as well as the planner. The felt needs of the consumer and the needs of the community observed by qualified social scientists constitute the expressed needs of a community. The syllabus of non-formal education must be based on these expressed needs. Since these change with the changing social dynamics, mere textbooks will not be able to meet the demand of such a system.

iii) Obtaining a Diploma or a Degree should be incidental to non-formal education. Non-formal education need not be a replica of the formal education and cater to the populist degree mania. It should offer courses in further education which are not degree oriented but leisure time education either to improve the quality of life or to provide specific skills to people who wish to improve their vocational standards. It should offer courses for operatives, apprentices, midwives and intending craftsmen; it should give courses on Planned Parenthood, horticulture, plant diseases and inflation.

The above list is illustrative and not exhaustive. From this it need not be construed that non-formal education is a stream of socio-economically handicapped. In fact, a linguist wishing to learn logic or cybernetics, an economist wanting to learn statistics or a physicist wishing to learn philosophy or music can take advantage of non-formal education. The emphasis, however, should be on those who have no access to education rather than on those who had some education but no access to higher education. The reason for this is to avoid the danger of the privileged having best of both the worlds of formal and non-formal education.

The formal education being elitist, by way of concession to the common man, puts a little work experience in education. This again is lip service as the managers of education have failed to evolve a strategy to give credit to the child who is engaged in productive
activities out of school. They insist on his being engaged in some work experience activities which are by and large irrelevant to his/her lifestyle at home. Non-formal education on the other hand must be work-centered education. It must weave educational programmes around work.

It must, however, be seen that educational components in non-formal education is not watered down as work experience has been watered down in formal education.

At this stage it is necessary to clarify the confusion existing between what is known as correspondence courses and continuing education on the one hand and non-formal education on the other. In Pakistan all Institutes of Correspondence Courses and Continuing Education are engaged in extending the scope and accessibility of formal education. They are engaged in imparting degrees to those who for a variety of reasons could not reach the portals of university. This, no matter how important an institution, is anything but non-formal education.

Those seriously thinking about continuing education have to make up their mind as to whether primary interest is education or certification with or without instruction. If it is the former, then certain amount of flexibility can also be built into this system. Courses could be designed and offered to those who are academically ready for it without insisting on a degree or diploma as necessary qualification for entrance.

While because of the requirements of degrees and strata, formal education has to insist on levels of entry behaviour, non-formal education has to be prepared to take the given and plan for their further education. Therefore, the curriculum of the non-formal education has to be flexible, need based, motivating and motivated.

As the main purpose of non-formal education is to convey a host of multifaceted information of immediate relevance to the common man, induce critical thinking and generate group interaction among them with a view to establishing an egalitarian society, it poses a major problem in communication.

There is more to adult language learning than merely learning a language in the conventional sense. It is not merely building up of emergency vocabulary and controlled communication through graded and guided structures to meet the immediate day to day needs nor is it the study of the history of language and literature concerned. It is not merely learning a device to express emotions and sentiments and to control behaviour. It is all these and yet something more. It involves (a) creating an objective need in the learner for using the language for complex intellectual operations; (b) creating the ability in him to articulate the intellectual process in the company of his fellow professionals and (c) creating the ability in him to comprehend the present, interpret the past and project the future through the use of language. Thus the learner must acquire competence to make appropriate responses in the varied social settings he is called upon to participate, fight the poverty of conceptual experience and test the relevance of any education he may have received through formal institutions. The learner must acquire the ability to question, to
interpret, to hypothesise, and to express his/her views clearly. It is in this sense that language learning is a necessary condition of both academic success and success in life.

**Strategies for Non Formal Education**

What’s Different about Distant Teaching Classroom teachers rely on a number of visual and unobtrusive cues from their students to enhance their delivery of instructional content? A quick glance, for example, reveals who is attentively taking notes, pondering a difficult concept, or preparing to make a comment. The student who is frustrated, confused, tired, or bored is equally evident. The attentive teacher consciously and subconsciously receives and analyzes these visual cues and adjusts the course delivery to meet the needs of the class during a particular lesson. In contrast, the distant teacher has few, if any, visual cues. Those cues that do exist are filtered through technological devices such as video monitors. It is difficult to carry on a stimulating teacher–class discussion when spontaneity is altered by technical requirements and distance. Without the use of a real–time visual medium such as television, the teacher receives no visual information from the distant sites. The teacher might never really know, for example, if students are asleep, talking among themselves or even in the room. Separation by distance also affects the general rapport of the class. Living in different communities, geographic regions, or even states deprives the teacher and students of a common community link.

- Why Teach at a Distance?
  Many teachers feel the opportunities offered by distance education outweigh the obstacles. In fact, instructors often comment that the focused preparation required by distance teaching improves their overall teaching and empathy for their students.
  - The challenges posed by distance education are countered by opportunities to:
  - Reach a wider student audience
  - Meet the needs of students who are unable to attend on–campus classes
  - Involve outside speakers who would otherwise be unavailable
  - Link students from different social, cultural, economic, and experiential backgrounds
  - Improving Planning and Organization In developing or adapting distance instruction, the core content remains basically unchanged, although its presentation requires new strategies and additional preparation time.

Suggestions for planning and organizing a distance delivered course include:

- Begin the course planning process by studying distance education research findings. There are several research summaries available (see Moore & Thompson, 1990).
- Before developing something new, check and review existing materials for content and presentation ideas.
- Analyze and understand the strengths and weaknesses of the possible delivery systems available to you (e.g., audio, video, data, and print) not only in terms of how they are delivered (e.g., satellite, microwave, fiber optic cable, etc.), but in terms of learner needs and course requirements before selecting a mix of instructional technology.
Hands-on training with the technology of delivery is critical for both teacher and students. Consider a pre-class session in which the class meets informally using the delivery technology and learns about the roles and responsibilities of technical support staff.

At the start of class initiate a frank discussion to set rules, guidelines, and standards. Once procedures have been established, consistently uphold them.

Make sure each site is properly equipped with functional and accessible equipment. Provide a toll-free “hotline” for reporting and rectifying problems.

If course materials are sent by mail, make sure they are received well before class begins. To help students keep materials organized, consider binding the syllabus, handouts, and other readings prior to distribution.

Start off slowly with a manageable number of sites and students. The logistical difficulties of distant teaching increase with each additional site.

Meeting student needs to function effectively; students must quickly become comfortable with the nature of teaching and learning at a distance. Efforts should be made to adapt the delivery system to best motivate and meet the needs of the students, in terms of both content and preferred learning styles.

Consider the following strategies for meeting students’ needs:

- Assist students in becoming both familiar and comfortable with the delivery technology and prepare them to resolve the technical problems that will arise. Focus on joint problem solving, not placing blame for the occasional technical difficulty.
- Make students aware of and comfortable with new patterns of communication to be used in the course (Holmberg, 1985).
- Learn about students’ backgrounds and experiences. Discussing the instructor’s background and interests is equally important.
- Be sensitive to different communication styles and varied cultural backgrounds. Remember, for example, that students may have different language skills, and that humor is culturally specific and won’t be perceived the same way by all.
- Remember that students must take an active role in the distance delivered course by independently taking responsibility for their learning.
- Be aware of students’ needs in meeting standard university deadlines, despite the lag time often involved in rural mail delivery.
- Use Effective Teaching Skills For the most part, effective distance teaching requires the enhancement of existing skills, rather than developing new abilities.

Pay special attention to the following:

- Realistically assess the amount of content that can be effectively delivered in the course. Because of the logistics involved, presenting content at a distance is usually more time consuming than presenting the same content in a traditional classroom.
- Be aware that student participants will have different learning styles. Some will learn easily in group settings, while others will excel when working independently.
- Diversify and pace course activities and avoid long lectures. Intersperse content presentations with discussions and student-centered exercises.
Humanize the course by focusing on the students, not the delivery system.
Consider using a print component to supplement non-print materials (see Graham & Wedman, 1989).
Use locally relevant case studies and examples as often as possible to assist students in understanding and applying course content. Typically, the earlier in the course this is done, the better.
Be concise. Use short, cohesive statements and ask direct questions, realizing that technical linkages might increase the time it takes for students to respond.
Develop strategies for student reinforcement, review, repetition, and remediation. Towards this end, one-on-one phone discussions and electronic mail communication can be especially effective.
And finally...relax. Participants will quickly grow comfortable with the process of distance education and the natural rhythm of effective teaching will return.
Improving Interaction and Feedback Using effective interaction and feedback strategies will enable the instructor to identify and meet individual student needs while providing a forum for suggesting course improvements.

To improve interaction and feedback, consider the following:
• Use pre-class study questions and advance organizers to encourage critical thinking and informed participation on the part of all learners. Realize that it will take time to improve poor communication patterns.
• Early in the course, require students to contact you and interact among themselves via electronic mail, so they become comfortable with the process. Maintaining and sharing electronic journal entries can be very effective toward this end.
• Arrange telephone office hours using a toll-free number. Set evening office hours if most of your students work during the day.
• Integrate a variety of delivery systems for interaction and feedback, including one-on-one and conference calls, fax, E-mail, video, and computer conferencing. When feasible, consider personal visits as well.
• Contact each site (or student) every week if possible, especially early in the course. Take note of students who don’t participate during the first session, and contact them individually after class.
• Use pre-stamped and addressed postcards, out-of-class phone conferences, and E-mail for feedback regarding course content, relevancy, pace, delivery problems, and instructional concerns.
• Have students keep a journal of their thoughts and ideas regarding the course content, as well as their individual progress and other concerns. Have students submit journal entries frequently.
• Use an on-site facilitator to stimulate interaction when distant students are hesitant to ask questions or participate. In addition, the facilitator can act as your on-site “eyes and ears”.
• Call on individual students to ensure that all participants have ample opportunity to interact. At the same time, politely but firmly discourage individual students or
sites from monopolizing class time.

- Make detailed comments on written assignments, referring to additional sources for supplementary information. Return assignments without delay, using fax or electronic mail, if practical.

6. SUMMARY

Now let us go through the summary of the unit. In teaching/educational strategy, we have learnt about three styles of instruction i.e. class, group and individual instruction. Individualised instruction is a child-centered activity or to consider one's level and desires, it focuses on an individual personality development, to build the character well and to bring insight. It follows through assignment and study methods. Its instructional methods are: Kindergarten, Montessori, Dalton Plan, Programmed instruction and Computer use.

Froebel and Pestalozzi introduced kindergarten methods. Plan works on freedom, play and joy. Three ways are used in form of songs, movements and construction. Froebel arranges a total of twenty gifts and activities out of which seven are most important. Occupations are activities suggested by gifts, Froebel divides curriculum in religion, science, language and arts.

Dr. Maria Montessori used Montessori Method. She taught children through real experiences by giving them concrete material. She insisted on freedom, education for growth, self-sense and motor training for children, in this system, and training focuses on bearing certain responsibilities. Basis of this method of teaching is 3Rs, which is quite different from other methods.

Dalton Plan was experimented by Miss Helen Parkhurst. It is not precise for any subject rather organises schoolwork to promote purposive self-activity. In this system, specialist teachers supervise pupils through assignments, contracts, and subject laboratories, which are well equipped, and are used to make more access of pupils to vast literature on the subject.

Programmed Instruction' is based on principles of operant conditioning (reinforcement). Real milestone of this system is Prof. B.F. Skinner. In this system, subject matter is arranged in bits, one after the other and presented to pupils and stimulus 'response - reinforcement cycle is repeated. Form of Programme is textbooks, cards, and teaching machines. It comprises branched programming. Teaching machine device requires answers fed by learner -- a self-study method.

Computers and software are referred to as CAI, Computer functions as an aid to instruction, commonly used to drill, practice, tutorial, simulation and problem solving.

Group instruction is imparted to a group of students at the same time and place. Kurts Lewin was the first, who attempted this style in Iowa University. Disciplines like physical education, music, arts, are taught through this method by addressing certain
principles. Problem solving and project methods fall in this category, which is proceeded through inductive and deductive approach. Both methods require passing through certain steps. Class instructor considers the class as a unit. The very same method is prevalent throughout the subcontinent. Preservation of social values and continuity of social process are the focal points in this method.

Instructional Method includes demonstration, storytelling and lectures. Demonstration reveals, “How”, i.e. a practice oriented activity with certain merits and demerits.

Story telling is useful for elementary groups. Topics like Islamiyat, social studies and history may be taught well. It cannot be used as a method. However, a judicious (careful) use is allowed. It motivates students but over fascination may lead to impracticality. It requires the following certain principles.

Lecture method is next to discussion. Usually, it is a one-way and teacher-centred activity but it saves, time and resources. Pupils remain passive and, especially, average students find it difficult and may not be able to take notes properly. However, following the guidelines it may be used in a better way.

Through utilising the use of ICT within lessons it also encourages the notion of active engagement, whereby it is deemed that pupils learn most effectively when they are interested, involved and appropriately challenged by the task. This is typically when pupils are most engaged with their learning.

Non-formal education can grow with planning from the bottom. Integrated rural development and integrated education for the masses of people is almost sine qua non. Use of the language of the people to communicate, motivate and involve them is a key concept in this process. As these approaches challenge the existing attitudes, values and institutional framework, these are considered subversive by the vested interest. However, the success of non-formal education depends on the clarity of purpose and resolve for action by those responsible for it.

7. SELF ASSESSMENT QUESTIONS

Q. 1 Explain the kinds of instructions with examples.
Q. 2 Describe the main principles of individualised, group and class instruction.
Q. 3 Narrate procedures adopted to practice individualised instruction.
Q. 4 Illustrate methods (instructional) of individualised instruction.
Q. 5 Discuss the background of Kindergarten, Montessori, Dalton Plan, Programmed Teaching and Computer.
Q. 6 Narrate merits and limitation of each method.
Q. 7 Define problem-solving method and outline its steps briefly.
Q. 8 Give two examples of problem solving applying deductive and inductive method in daily life.
Q. 9 Define project and list the steps to be followed in this method.
Q. 10 Explain meaning of Class Instruction.
Q. 11 Prepare a checklist for arranging Demonstration.
Q. 12 Write merits and demerits of demonstration, storytelling and lecture method.
Q. 13 How can you as a teacher incorporate the use of ICT in daily teaching?
Q. 14 Discuss the instructional strategies used for Non Formal education in Pakistan.

8. REFERENCES


EVALUATION OF INSTRUCTION

Compiled By:
Ms. Tooba Saleem

Reviewed By:
Dr. Sidra Rizwan
## CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>215</td>
</tr>
<tr>
<td>Objective</td>
<td>215</td>
</tr>
<tr>
<td>1.   Formative Evaluation</td>
<td>216</td>
</tr>
<tr>
<td>2.   Summative Evaluation</td>
<td>221</td>
</tr>
<tr>
<td>3.   Need to Evaluate Classroom Instruction</td>
<td>223</td>
</tr>
<tr>
<td>3.1  Assist Teachers</td>
<td>224</td>
</tr>
<tr>
<td>3.2  Assess the Quality of Instruction</td>
<td>224</td>
</tr>
<tr>
<td>3.3  Monitor Teacher’s Progress</td>
<td>224</td>
</tr>
<tr>
<td>3.4  Administrative Decision-making</td>
<td>225</td>
</tr>
<tr>
<td>4.   Categories of Evaluation</td>
<td>225</td>
</tr>
<tr>
<td>4.1  Content-related</td>
<td>226</td>
</tr>
<tr>
<td>4.2  Instruction-related</td>
<td>226</td>
</tr>
<tr>
<td>4.3  Climate-related</td>
<td>226</td>
</tr>
<tr>
<td>4.4  Classroom Management-related</td>
<td>226</td>
</tr>
<tr>
<td>5.   Self-Assessment Questions</td>
<td>227</td>
</tr>
<tr>
<td>6.   References</td>
<td>227</td>
</tr>
</tbody>
</table>
INTRODUCTION

In this unit you will be told about the basic concept of evaluation of instructional materials and its major types. The basic differences in two types of evaluation will help the learners to explain and understand the need of evaluation in classroom instruction. Further, it will help the learners to use the different strategies to evaluate their instruction in classroom setting.

Evaluation is the process of examining a program or process to determine what's working, what's not, and why. It determines the value of learning and training programs and acts as blueprints for judgment and improvement. (Rossett, Sheldon, 2001). Evaluations are normally divided into two categories: formative and summative.

Patton (1997) describes three primary uses of evaluation:

- to judge merit or worth of program (such is the purpose of a “summative evaluation”),
- to improve programs (such is the purpose of a “formative evaluation”), or
- to generate knowledge.

A summative evaluation is conducted at the end of a program to help decision makers decide a program’s future. A formative evaluation is conducted during the life of a program to identify its strengths or weaknesses and enhance its quality and effectiveness.

OBJECTIVES

After studying this unit, the prospective teachers will be able to:
1. differentiate between the concepts of formative and summative evaluation
2. understand the need for evaluating the classroom instruction
3. analyze the classroom instruction related categories of evaluation
1. **FORMATIVE EVALUATION**

A formative evaluation (sometimes referred to as internal) is a method for judging the worth of a program while the program activities are forming (in progress). They can be conducted during any phase of the process. This part of the evaluation focuses on the process.

Thus, formative evaluations are basically done on the fly. They permit the designers, learners, instructors, and managers to monitor how well the instructional goals and objectives are being met. Its main purpose is to catch deficiencies during process so that the proper learning interventions can take place that allows the learners to master the required skills and knowledge.

Formative evaluation is also useful in analyzing learning materials, student learning achievements and teacher effectiveness. Formative evaluation is primarily a building process which accumulates a series of components of new materials, skills, and problems into an ultimate meaningful whole (Guyot, 1978).

Hence, in curriculum development process an evaluation during the process of programme development instructional materials, even if developed by highly experienced and competent teams, need to be tried out in an actual classroom situation before being released for general dissemination in an educational system. On the basis of empirical data collected during the process of programme development, the curriculum team is able to improve the programme by changing or omitting certain portions, by suggesting additional learning activities, or by changing the sequence of the already existing learning activities. Evaluation activities should be performed throughout the whole process of programme development and under no circumstances should they be postponed until the programme is completed and disseminated throughout the entire system.

The gathering of evidence while parts of a programme are still being developed is termed *formative evaluation*. Formative evaluation may be applied to particular components of a programme at the very beginning of programme development activities. As soon as certain components are developed, it is advisable to examine them empirically in order to determine their efficiency in obtaining the desired objectives. Evaluation of this type is referred to as *prototype evaluation*. When the curriculum team has developed the major portions of the programme, it becomes possible to assemble them into a tentative kit and try them out on a few classes. Often, at the time of such *preliminary try-outs* various minor components of the programme will still be missing and instructional materials at this stage will appear in a very preliminary form.

For instance, textbook takes the form of mimeographed sheets and pictorial material may not yet be collated with the text. On the basis of evidence gathered at such a preliminary try-out setting, the instructional materials will be modified and a new edition of the kit will be produced. This edition, which will already contain all components of the programme in a form approximating its finally intended one, may then be tested in a
group of classes which have been selected to represent the target population of the programme. Thus, formative evaluation of a programme generally consists of three consecutive stages: prototype evaluation, a preliminary try-out and a field trial.

1. **Prototype Evaluation**
   Decisions are made about the types of learning activities which will be included in the programme at the very beginning of programme development. For example, for a sixth-grade chemistry course, it was decided that the students would use a precision scale to weigh various objects. The development team was not sure if children at that age would be able to use such an instrument easily and therefore they conducted a small-scale evaluation study; on the basis of the data collected, they found that children aged 11 are capable of using a precision scale, but that they work with the scales very slowly and have to devote too much attention to their operation. It was concluded that the use of a precision scale would distract the children's attention from other tasks they have to perform.

On the basis of such evidence the team decided to change the nature of the activities planned for the course, eliminating the use of a precision scale. Evaluation activity of this type generally deals with a category, or type of activity. Thus, for example, to test whether students of a certain group have difficulty in using a microscope, one may conduct a prototype evaluation study. Such a study can be performed even before the instructional material is ready for classroom use. If evidence is gathered showing that students can use the microscope, then the curriculum writer may suggest a series of exercises which involve the utilization of the microscope. However, to test whether students are able to perform a particular learning activity which requires, among other things, the utilization of a microscope, one has to wait till the preliminary try-out of the actual study materials to be carried out in the classes.

2. **The Preliminary Try-out**
   The preliminary try-out of curriculum materials is performed when the first version of the programme is ready for use in the classroom. On the basis of prior prototype studies, the developing team will have a good idea as to whether the programme in its totality will be likely to succeed; nevertheless, there will still be uncertainty concerning the adequacy of certain details of the programme. The curriculum team will want to find answers to the following questions: What specific learning activities are difficult for the learner? What portions of the programme should be presented in a simpler form? Where are more exercises and repetitions needed? What can be eliminated from the programme without much loss? These types of questions have to be answered on the basis of empirical try-outs of the new curriculum materials.

Ideally, the curriculum team includes at least one member who is knowledgeable and competent in the field of evaluation. This person must be aware of the overall aims of the programme and should help in carrying out the try-out. To avoid the danger of novel features of the programme being refuted by adverse critics before they have had a chance of being thoroughly examined in a large sample of students, it is recommended that
evaluation at this stage be performed by a person who is a sympathetic co-worker of the team. External evaluation by persons who did not participate in the programme development should be postponed to the field trial stage.

The preliminary try-out is conducted on a small sample made up of 4-6 classes. The classes are selected on the basis of the teachers' willingness to co-operate with the curriculum team. During the whole try-out process the curriculum team maintains close contact with the classes, discusses the problems related to utilization of the new programme with the teachers, observes the classes and collects data of different types. The fact that only a small number of classes participate in the try-out enables the curriculum team to observe the process of teaching the programme in the classroom very closely. As a result of analyzing the data and collating the results obtained, the curriculum team revises the programme and prepares a second last version which is then submitted to a field trial. It should be noted that evaluation conducted at this stage does not rely on objective measures only. On the contrary, the evaluators seek a wide variety of evidence and are interested in gathering the opinions and reactions of various persons. The mode of evaluation common at this stage has been termed 'responsive' (Stake, 1973) and illuminative (Parlett, 1974), suggesting the utilization of unstructured types of data such as that which can be furnished by experts, teachers and parents. Experience has shown that both unstructured and structured data can provide evidence for the improvement of a programme.

An important characteristic of the try-out is that it can be conducted before all of the elements of the programme are fully completed. Thus, since the curriculum team maintains close contact with the teachers of try-out classes, it is possible to conduct the try-out even before the teachers' guide is prepared. Moreover, very often the teachers' guide is prepared simultaneously with the preliminary try-out of the material and with the co-operation of the try-out teachers.

The fact that the try-out is performed on a small number of classes facilitates the speedy production of the instructional materials. At this stage, it may be sufficient to reproduce the textbook in mimeographed form and to use provisional hand-made equipment. Therefore, the 'preliminary try-out' of the material itself does not necessarily prolong the time needed for the completion of the programme. Since giving the final touches to the material and its preparation for print are time-consuming, one can minimize the additional calendar time needed for a preliminary try-out by proper scheduling.

3. The Field Trial
The second last version of the programme is submitted to a field trial on a representative sample of the target population. Usually 30-50 classes are selected, depending upon the available resources and upon the homogeneity of the target population. In the case of a highly heterogeneous target population, in which regional, linguistic or ethnic differences are substantial, a stratified sample should be selected. This may require a larger number of participants than a simple random sample. In the field trial the curriculum team cannot maintain close contact with all of the classes in the sample, and it is often necessary for
them to utilize long-distance means of communication. For this reason, they cannot rely on their personal impressions and experiences to judge the successes or failures of the programme, and it becomes necessary for them to develop formal instruments, such as multiple choice tests and questionnaires, for the purpose of data collection. The field trial is designed to examine the efficiency of the programme. At this stage, the programme is almost in its final form and the conditions under which it is tested are more representative of those in the entire system than those of the preliminary try-out. For example, the teachers have been randomly selected rather than having volunteered, and the type of communication between them and the developers more closely reflects the situation which will exist in the entire system. If the preliminary try-out has been carried out carefully, the field trial will not result in major modifications of the programme, but rather in suggestions concerning the required conditions for the programme's use. Suggestions may be made concerning teacher training and physical facilities. Information will be obtained regarding the time needed for the course, the kinds of pre-requisites necessary, and the types of student most likely to benefit from the new programme. The types of data used within the context of formative evaluation can be classified into three major categories: judgmental, observational and performance.

1. **Judgmental Data**

The data provided from the opinions of the experts, teachers, parents, supervisors and students who have worked with the new curriculum material are called judgmental data. This type of data is gathered through the use of questionnaires and interviews. One advantage of judgmental data is that they can be gathered with a minimum of difficulty and time. They can be gathered and analyzed very quickly, and thus they can reveal both the strengths and the weaknesses of the new programme in due time to permit the curriculum developers to use the evidence without resulting in delay of development activities. A major source of difficulty with this type of data is that they are not free of the particular biases and attitudinal sets of the respondents which may result in distorted responses; for this reason it is advisable not to rely solely on subjective opinions but to gather additional types of evidence also. Judgmental data can be used to answer the following types of questions:

**Questions addressed to curriculum and subject matter experts**

- What relationship exists between the objectives, contents and learning strategies contained in the programme?
- How accurate are the curriculum materials?
- How well are the various components of the curriculum related to each other? Does the sequencing of learning activities appear to be appropriate from the point of view of the subject matter as well as from the point of view of the learner?

**Questions addressed to teachers and supervisors**

- Are the materials feasible and practical for use by the teachers?
- Do the teachers need retraining?
- Are the costs of the materials likely to be too great?
• Are explanations and illustrations contained in the teachers' guide and instructional materials clear?
• Is the difficulty level appropriate for the target population?
• What specific aspects are too difficult or too easy? How relevant are these materials to the students' interests and needs? What desirable or undesirable changes are likely to take place in the students other than those specified in the curriculum plan?

Questions addressed to learners
Were the explanations clear?
Were the materials too easy or too difficult?
Were the materials interesting?

2. Observational Data
• Observational data are collected through the systematic observation of teaching/learning situations in the classroom or elsewhere. Trained or untrained observers record their observations either in a free manner, or according to structured and pre-determined categories. Observational data are used to determine how the curriculum materials and procedures are actually employed in the classroom and whether they fit the criteria or specifications designated by the curriculum team. For example, information about the following items might be sought through observational techniques:
  • The kind of questions raised by teachers;
  • The roles students assume;
  • The types of materials and equipment which teachers and students are expected to use;
  • The way students are grouped in the class;
  • The types of interactions (including questions and answers);
  • Misinterpretations of the learning material.

Observation is carried out also to provide data about the learners' reactions to the instructional materials. Notes might be taken about the following things:
• Attention paid to the teacher's explanations;
• Involvement in performing required tasks;
• Interest in the study materials;
• Difficulties encountered in comprehending the materials or performing assignments.

3. Performance Data
This third type of data provides information regarding the central problem of curriculum development, that is, what is learned by the students when the curriculum materials and methods are used properly. While this may be determined in part through both observation of students and student reports, in most curriculum centres structured or semi-structured tests are used to determine what students can do and how they feel about
what they have been required to do in the programme. Generally tests of this sort are
developed after careful analysis of both the learning objectives for the programme and the
actual curriculum materials.

One advantage of this type of data is that they provide the most direct evidence about the
effectiveness of the curriculum materials and methods, and as a result they can serve to
support or negate the conclusions drawn from the other types of data which were
collected at an earlier stage.

For formative evaluation, the use of criterion-referenced tests is recommended. Each
item on such a test represents a well-defined specific behavioural objective. Unlike the
commonly used standardized objective test, which tends to rank students according to
their score on a particular test, the criterion-referenced test enables one to determine if a
student has mastered particular objectives or not. Since the curriculum developer is
interested in knowing what the weak points of the programme are and what portions of
the programme require further revision, he has to obtain separate information related to
each particular programme objective; it is not sufficient for him to know how an
individual student performs on a test in comparison to other students of the same group,
and therefore his purposes are better served by a criterion-referenced test.

2. SUMMATIVE EVALUATION

Summative assessments are used to evaluate student learning, skill acquisition, and
academic achievement at the conclusion of a defined instructional period—typically at
the end of a project, unit, course, semester, program, or school year. Generally speaking,
summative assessments are defined by three major criteria:

The tests, assignments, or projects are used to determine whether students have learned
what they were expected to learn. In other words, what makes an assessment
“summative” is not the design of the test, assignment, or self-evaluation, per se, but the
way it is used—i.e., to determine whether and to what degree students have learned the
material they have been taught.

Summative assessments are given at the conclusion of a specific instructional period, and
therefore they are generally evaluative, rather than diagnostic—i.e., they are more
appropriately used to determine learning progress and achievement, evaluate the
effectiveness of educational programs, measure progress toward improvement goals, or
make course-placement decisions, among other possible applications.

Summative-assessment results are often recorded as scores or grades that are then
t factored into a student’s permanent academic record, whether they end up as letter grades
on a report card or test scores used in the college-admissions process. While summative
assessments are typically a major component of the grading process in most districts,
schools, and courses, not all assessments considered to be summative are graded.
Formative evaluation is about the process of collecting data to improve the effectiveness of instruction (and your design), by contrast, summative evaluation is the process of collecting data to make decisions about the continued use of instruction (and your design).

The summative evaluation has two main phases:
1. **Expert Judgment** (to decide whether an instruction candidate (human, machine or a combination) has the potential to meet the organization's defined instructional needs) There are five activities undertaken to decide if the candidate instruction is promising:
   2. Evaluate the congruence between the organization's instructional needs and candidate instruction
   3. Evaluate the completeness and accuracy of the candidate instruction
   4. Evaluate the instructional strategy contained in the candidate instruction
   5. Evaluate the utility of the instruction
   6. Determine the current user's satisfaction with the instruction

2. **Field Trial** (to document the effectiveness of promising instruction with target group members in the instructional setting). The field trial has two stages:
   i) Outcomes analysis: determine the impact of instruction on the learner's kills, on the job, and on the organization
   ii) Management analysis: assess instructor and supervisor attitudes related to learner performance, implementation feasibility, organization culture match, and costs.

A summary of Summative Evaluation Phases and Specific Decisions:

<table>
<thead>
<tr>
<th>Expert Judgment Phase</th>
<th>Summative Evaluation</th>
<th>Field Trial Phase</th>
<th>Overall Decisions</th>
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<tbody>
<tr>
<td>Do the materials have the potentials for meeting this organization's needs?</td>
<td>Are the materials effective with target learners in the prescribed setting?</td>
<td>Specific Decisions</td>
<td></td>
</tr>
</tbody>
</table>
Congruence Analysis: Are the needs and goals of the organization congruent with those in the instruction? Content Analysis: Are the materials complete, accurate, and current? Design Analysis: Are the principles of learning, instruction, and motivation clearly evident in the materials? Feasibility analysis: Are the materials convenient, cost-effective and satisfactory for current users?

Outcomes Analysis:

Impact on the Learner: Are the achievement and motivation levels of the learners satisfactory following instruction? Impact on the Job: Are learners able to transfer the information, skills and attitudes from the instructional setting to the job setting or to subsequent units of related instruction? Impact on the Organization: Are learners' changed behaviors (performance, attitudes) making positive differences in the achievement of the organization's mission and goals?

Management Analysis:

1. Are instructor and manager attitudes satisfactory?
2. Are recommended implementation procedures feasible?
3. Are costs related to time, personnel, equipment and resources reasonable?

Source: [http://people.ucalgary.ca/~ekowch/673/mar20/formsum.html](http://people.ucalgary.ca/~ekowch/673/mar20/formsum.html)

3. NEED TO EVALUATE CLASSROOM INSTRUCTION

Gensee and Upshur (1996) stated that classroom assessment and evaluation is concerned primarily with improving instruction so that student learning is enhanced. Classroom teachers in educational system, more than anyone else, are actively and continuously involved in assessment and evaluation.

As a rule of thumb, (a practical method of measuring based on experience) any instruction consists of three components;

a) The purposes identify the objectives of instruction- the “WHY”.

b) The plans describe the means of attaining those objectives- the “HOW”.

c) And practices are what actually take place in the classroom- the “WHAT”.

Thus, we can say that classroom assessment and instruction has four aspects (purposes, plans, practices, and input factors) which will be dealt with one by one as follows:

To be useful and effective, evaluation and assessment requires planning. Preparing for evaluation should be an integral part of planning each lesson or unit as well as general planning at the beginning of the school year or course. Instruction and evaluation should be considered together in order to ensure that instruction provides itself to evaluation and
that the results of evaluation can direct ongoing instructional planning. Moreover, if evaluation is not planned along with instruction, the time required for assessment activities will most likely not be available. As pointed earlier, clearly an important focus of classroom assessment and evaluation is student achievement. Teachers need to know what and how much students have learned in order to monitor the effectiveness of instruction, to plan ongoing instruction, and for accountability purposes.

The most important consideration in teaching evaluation, both for improvement purposes and for personnel decisions, is the use of multiple methods of teaching evaluation involving multiple sources of data. There are different ways and sources to evaluate the classroom instruction. Some important sources are as follow:

3.1 Assist Teachers
In most of the institutions, faculty and administrators rely on student ratings of teaching effectiveness for teaching improvement purposes and for personnel decisions. Now, however, surveys about how teaching is evaluated on college and university campuses demonstrate an increase in use of faculty colleagues as raters of teaching effectiveness. Colleague review of teaching can play a significant a role as does peer evaluation of research.

Colleagues who have expertise in the discipline being taught and training in what to observe can provide important evaluative information through classroom visits and review of course materials and instructional contributions. For a faculty member engaged in interdisciplinary instruction, evaluation may involve colleagues with expertise in similar interdisciplinary instruction and/or with expertise in each of the individual disciplines represented by the faculty member.

3.2 Assess the Quality of Instruction
Evaluation of classroom teaching -- Colleagues can provide important evaluative information through classroom visits. In particular, a colleague's observation of such aspects of teaching as appropriateness of materials and methods, breadth and depth of material covered, the relation of such material to the syllabus and goals of the course, and incorporation of recent developments in the discipline can offer a more informed appraisal of the instructor's mastery of content than can students' perceptions. There is consensus that peer observation has enjoyed more success as a strategy for teaching improvement than for personnel decisions. When used for personnel decisions, it is important to have explicit criteria by which colleagues make evaluations. A standardized observation form will yield systematic and comparable data, especially if participating faculty are trained in what and how to observe. The evaluation process is enhanced when, prior to classroom visits, colleagues review the syllabus and course-related materials and discuss course goals and class objectives with the instructor.

3.3 Monitor Teacher’s Progress
There is no single prescription for how a teaching progress can be monitored or assessed or what specific information it should contain. Most including information in the
following three areas:

1. This may contain reflective statements by the faculty member on the development of and changes in his or her teaching philosophy, strategies, and objectives; efforts to evaluate and improve teaching and changes resulting from having done so; ways in which he or she has kept up with the professional field in areas related to teaching performance; and his or her future teaching goals.

2. The environment in which the faculty member works. For example, the faculty member may describe his or her current expectations regarding distribution of effort among teaching, research, and service activities; include a list of classes taught; discuss important details about these classes that may affect teaching, such as class size and the characteristics, abilities, and motivations of the students; and provide a list of other teaching-related responsibilities and accomplishments.

3. Elements regarding the faculty member's teaching process. The faculty member may provide the following:samples of teaching materials, such as course syllabi, laboratory assignments, and videotapes of classroom teaching; samples of student learning, such as exams, papers, projects, slides of student work, etc.; and the faculty member's reflections about the samples of teaching and learning materials. For example, a faculty member may comment on the reasons for curricular revisions; innovations or experiments with teaching methods or course structure; how and why a particular course syllabus has changed from one year to another; why specific exam questions were chosen or specific assignments suggested; and ways in which students are provided feedback on exams and assignments.

3.4 Administrative Decision-making

Performance evaluation for teachers is a continuous process that takes place in a cycle. It consists of two complementary types of evaluation: formative and summative. The former is the process of gathering performance data, analyzing it, and using the results to provide feedback for the purpose of improving teaching. The latter is the process of using performance data to judge the quality of teaching in the light of the school’s established criteria for teacher performance for administrative decision making.

4. CATEGORIES OF EVALUATION

Teaching evaluation has as its central element the assessment of the quality of classroom instruction. Since teaching includes activities broader than classroom instruction, evaluation of teaching must assess more than classroom performance. While departments and schools may identify additional items, among the teaching activities that may be assessed are the following: quality, amount, and level of classroom instruction (including shared instruction) development of curricula, new courses, and classroom materials; supervision and mentoring of graduate students, including chairing of dissertations; service on graduate examination and dissertation committees; one-on-one consultation with students, including supervision of independent study and readings courses; supervision of teaching assistants in undergraduate courses; conduct and supervision of laboratory instruction; supervision of undergraduate and graduate research; advising
students in the major; supervision of field work; and supervision of clinical and practicum experiences.

4.1 Content-related
Evaluation of course materials -- Colleagues can evaluate course materials, such as syllabi, textbooks, handouts, assignments, graded exams, graded papers, etc. In the visual and performing arts, colleagues may evaluate faculty-directed art exhibits, theater and dance productions, musical ensembles, and individual performances when these activities are directly related to a faculty member's instructional activities. Examination by colleagues offers several advantages: It properly uses faculty expertise, can be done in a reasonable period of time, and can be done anonymously (just as is done with peer review of research). It is also appealing because it can be used for both personnel decisions and for teaching improvement purposes.

4.2 Instruction-related
Evaluation of instructional contributions -- Colleagues may be in the most advantageous position to evaluate such teaching-related activities as curriculum development, supervision of student research, participation in colleagues' and teaching assistants' teaching development, articles on teaching in disciplinary journals and other publications, and authorship of textbooks and other instructional materials.

4.3 Climate-related
It relates with developing and implementing clear classroom routines and appropriate standards at the beginning of each school year to insure the health, safety, and welfare of their students. This includes maintaining a clean, safe, and orderly learning environment that includes establishment of good work habits and discipline. Teachers should post and communicate the classroom standards and procedures as well as the consequences for misbehavior with students and their parents. Students should show evidence of respect for the rules in the classroom and on the campus. Teachers should strive to be fair, firm, and consistent as they maintain effective student control in the classroom and uphold the rules throughout the school. Teachers should refer students to support staff when necessary to maintain the appropriate learning environment.

4.4 Classroom Management-related
Managing discipline problems in accordance with administrative regulations, school board policies, and legal requirements
- Establishes and clearly communicates parameters for student classroom behavior
- Promotes self-discipline
- Manages disruptive behavior constructively
- Demonstrates fairness and consistency
- Arranges the classroom for effective instruction
Activity
1. Conceptualize the important elements of effective classroom instruction and develop a checklist.
2. Develop an observation sheet to evaluate the classroom instruction on the following four factors related to:
   i) Content material
   ii) Instructional strategies
   iii) Learning environment/Climate
   iv) Classroom management

5. SELF-ASSESSMENT QUESTIONS
1. Comment on the self-assessment as tool to evaluate the instruction. Discuss its benefits and flaws.
2. What elements of teaching make an instructional plan useful? Criticize the instructional gaps while evaluating a teacher.
3. Highlight the importance of learning environment and classroom management in the evaluation of instruction.
4. What is the significance of evaluation in making the instruction more affective?

6. REFERENCES


Related Web Links


http://www.crlt.umich.edu/tstrategies/guidelines


http://people.ucalgary.ca/~ekowch/673/mar20/formsum.html

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