

Module III: CURRICULUM DEVELOPMENT, ASSESSMENT AND EVALUATION

**Professional Competency Enhancement Program for Teachers
(PCEPT)**



**NATIONAL ACADEMY OF
HIGHER EDUCATION (NAHE)**

Learning Innovation Division
Higher Education Commission (HEC)

MODULE DEVELOPERS

Team Leader

Prof. Dr. Iftikhar Uddin Khwaja

Program Director

Iqra University Quetta

Members

Ms. Shahnaz Akhtar

Assistant Professor

University of Balochistan, Quetta

Ms. Abida Mirza

Research Officer

Iqra University Quetta

HEC Team

Ms. Noor Amna Malik

Director General

Learning Innovation Division

Higher Education Commission, Islamabad

Email: namalik@hec.gov.pk

Mr. Fida Hussain

Director

Learning Innovation Division

Higher Education Commission, Islamabad

Email: fhussain@hec.gov.pk

Ms. Ishrat Siddiqa Lodhi

Program Coordinator

National Academy of Higher Education (NAHE)

Higher Education Commission, Islamabad

Email: isiddiqa@hec.gov.pk

A. Introduction

One of the most important activities of the university is the development of curriculum or course outlines in consonance with the national and international demands and realities. In Pakistan, unfortunately, this activity is given the least importance since the use of popular textbooks available in the market have guided the selection of curriculum content and the topics of a syllabus.

For the last few decades, scholars have been raising doubts and questions about the validity of heavy reliance on a subject-centred approach to curriculum development that is dominated by textbook contents. Furthermore, the convergence of academic disciplines in the form of broad field and problem-orientation to knowledge incorporating a variety of theoretical perspectives requires innovative procedures for the development of curriculum. For this purpose, it is imperative that university teachers are aware of modern trends in the development of curriculum.

The key component of any curriculum is its instructional objectives or learning outcomes. To determine the extent to which these objectives or outcomes have been achieved, there is a need to assess students' learning. Students' assessment is a very complex task. Teachers often do not have the necessary background to meet its requirements appropriately. Hence, it is also necessary that teachers are exposed to a variety of tools to measure students learning.

Keeping in view the above two concerns, this module intends to equip university teachers with the basic knowledge and skills required to play an effective role in designing curriculum for their teaching areas and to develop and grade various kinds of tests in accordance with the learning outcomes intended for their courses. The andragogical approach designed here to achieve these objectives is built on the ideas of constructivists who believe that knowledge is dynamic. Knowledge evolves and gets constructed as its seekers interact with the external content and context. Therefore, the module relies upon learner-centred activities divided into following eight sessions:

1. Concept of curriculum
2. Plausible steps in curriculum development
3. Student Assessment
4. Learning Outcomes & Table of Specification
5. Objective Type Tests
6. Subjective Type Tests

7. Grading System

Since the module will be used by the Module Leaders (MLs) to train classroom teachers, it is imperative that the queries to module leaders, regarding its implementation for the classroom teachers, are properly answered. This will help to equip classroom teachers with the values, skills and knowledge embodied in the module. Furthermore, the behavior of the ML as a presenter of the module may serve as a model for faculty, which they may wish to adopt as their teaching style. In this case, the presentation by the ML will serve as a teaching strategy in order to train the classroom teacher as per the module requirement.

B. Aim

The basic purpose of this training module /manual is to equip MLs with the values, skills and knowledge so that they may train classroom teachers to perform their curriculum development tasks efficiently and effectively.

C. Module Objectives

This module intends to equip university teachers with the basic knowledge and skills required:

- To play an effective role in designing curriculum for their teaching areas.
- To develop and grade various kinds of tests in accordance with the learning outcomes intended for their courses.

Session I: Concept of Curriculum

1. Session Learning Outcomes

After the completion of this session the participants will be able to:

- Identify a definition of curriculum that is appropriate for university level academic programs.
- Develop and justify a model of curriculum development which corresponds with the needs of the universities of Pakistan
- Use a model of curriculum to assess the strengths and weaknesses of their own syllabi

2. Key Concepts and Content

2.1 *Key Concept: Concept of Curriculum*

In the past, the term 'curriculum' signified a course of studies followed by a pupil in a teaching institution. In the English-speaking tradition it was used as equivalent to the French concept programme d'études. Today, it means in general terms, the contract between society, the State and educational professionals with regard to the educational activities that learners should undergo during a certain phase of their lives to learn something desirable.

i) **Definitions of curriculum**

Standard dictionaries define curriculum as a course of study offered by an academic institution. According to Ronald Doll, curriculum is the formal and informal content and process by which learners gain knowledge and understanding, develop skills, and alter attitudes, appreciations, and values under the auspices of an academic institution. In other words, curriculum can be defined as the total experience. From this view point, Curriculum is not only the content selected and delivered, but also the planned and unplanned activities in which individuals' participate as students.

In educational literature, in short, the word curriculum has been defined in the following ways:

- "Curriculum is such "permanent" subjects as grammar, reading, logic, rhetoric, mathematics, and the greatest books of the Western world that embody essential knowledge".
- "Curriculum is those subjects that are most useful for living in contemporary society".
- "Curriculum is all planned learning for which the institution is responsible".
- "Curriculum is all the experiences learners have under the guidance of the institution".

- “Curriculum is the totality of learning experiences provided to students so that they can attain general skills and knowledge at a variety of learning sites”.
- “Curriculum is a structured series of intended learning outcomes”.

The other terms that are commonly used as synonymous to curriculum are syllabus and course. But curriculum can refer to any level of an educational experience, from that of a particular area within a course, to the course itself, to a broader program of study that comprises a number of different courses around a particular content area. Curriculum is often used to refer to a focus of study, consisting of various courses all designed to reach a particular proficiency or qualification; Syllabus refers to the content or subject matter, instructional strategies and evaluation means of an individual course. The collective syllabus of a program of study represents a map of the curriculum for that program. A curriculum is developed through planning for a larger program of study and then building syllabi for courses to manifest the curriculum design and plan. However, even developing a syllabus for a specific course can be thought of as a form of curriculum development.

2.2 *Key Concept: Models of Curriculum Development*

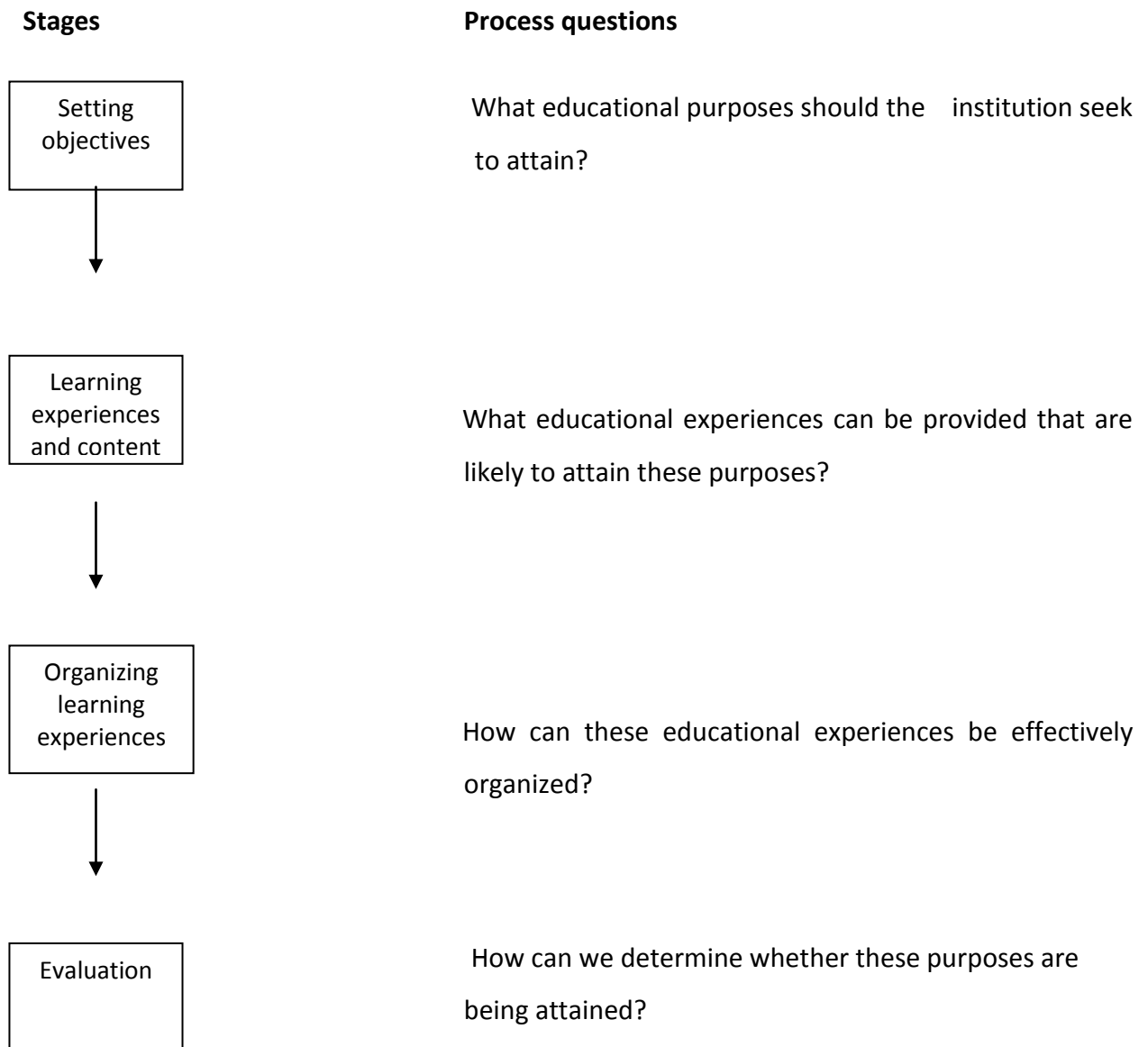
Curriculum development is understood as a process implying a wide range of decisions concerning learning experiences, taken by different actors at different levels, i.e. politicians, experts, and teachers at the national, provincial, local, institutions and also international levels.

2.2.1 The Tyler Rationale

The most influential model in the field of curriculum development is Tyler's model. It is sometimes known as the 'Tyler rationale' or the 'objectives model'. The model provides a framework of how to construct a planned curriculum. The rationale for the model is based on four questions which were posed in Tyler's well-known book *Basic Principles of Curriculum and Instruction*.

The questions provide a four-step approach which is logical, sequential and systematic. Figure 1 shows the relationship between the fundamental questions and the stages.

Figure 1: The Tyler Model of Curriculum Development



Another rational/objective model was developed by Hilda Taba. It was based upon the curriculum development process similar to Tyler's, but introduced additional steps and called for more information to be provided for each of them. The model is:

- Step 1: Diagnosis of needs
- Step 2: Formulation of objectives
- Step 3: Selection of content
- Step 4: Organization of content
- Step 5: Selection of learning experiences
- Step 6: Organization of learning experiences
- Step 7: Determination of what to evaluate and the ways and means of doing it.

Her model was an attempt to ensure that decisions about curriculum are made on the basis of valid criteria and not whim or fancy. She claimed that decisions should follow in the order of the seven steps. She advocated analyzing learners' needs by considering the society and culture in which they live and only then making decisions about the steps that follow. Therefore, she did not neglect contextual factors. However, her model has the same drawbacks as Tyler's, even though it is a more expansive model. On the positive side, the model was an advance on Tyler's and it incorporated up-to-date (at that time) knowledge from educational psychology about learning and teaching.

Another group of models include elements of the rational/objective models, but go beyond by viewing curriculum development as a continuing activity and adding modifications as new information becomes available. For example, pressure from the public about new business or social needs might result in updating curriculum.

A new element, called situational analysis, was introduced in the 1970s to Taba's diagnosis of needs. It refers to a detailed description and analysis of context in which a particular curriculum is to be implemented. This model comprises the following steps.

- situational analysis
- selection of objectives
- selection and organization of content
- Selection and organization of methods of teaching.
- evaluation of learning
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2.3 *Key Concept: Curriculum Development in Pakistan*

In Pakistan the procedures for the development of curriculum at various levels of schooling are apparently different. But the analyses of these procedures reveal that the key components of the curriculum development process are very much the same for all levels except that at the tertiary level of education where different kinds of stakeholders are involved in the development of curriculum whereas at the level of higher education, the process is controlled by the subject specialist.

In the following paragraphs the in vogue curriculum development procedures for both levels of education are outlined for the benefit of the participant.

2.3.1 Tertiary levels of education

Whenever it is intended to frame or revise a curriculum, the curriculum wing of the Ministry of Education sends the proposal to the provincial curriculum Bureau/Centres. These centres develop or revise the curriculum in the light of the framework provided by the curriculum wing. In the provincial centres the revision or framing of the curriculum is done by the Committees. These committees usually comprise subject specialists and persons equipped with pedagogical skills. The draft curriculum is sent to the curriculum wing, Ministry of Education, for their consideration and approval. In the Curriculum Wing, the draft curriculum on each subject received from the Provincial Centres is put up to the concerned National Review Committee. This Committee is usually constituted for each subject and comprises the nominees of the Provincial Governments and subject specialists considered suitable for the purpose. The Curriculum finalized by the National Review Committee is then put up to the Education Secretary for approval. The approved curriculum is sent to the Provincial Textbook Boards for production of textbooks. Various steps involved in Curriculum Development are listed below:

- Curriculum Wing requests the Provincial Centres to prepare draft curriculum for each subject taught in various classes up to Class XII.
- Provincial Centres call in Committee of Experts, Teachers, and Subject Specialists on each subject.
- Provincial Curriculum Committees prepare curriculum plan.
- The draft plan is sent to the Curriculum Wing.
- Curriculum Wing circulates the drafts to the selected teachers, subject specialists in schools, colleges, and other agencies concerned and invites their comments.
- The comments are reviewed in the Curriculum Wing.
- The National Committee of Curriculum scrutinizes the draft in the light of the comments.
- The Committee submits its recommendations to the Ministry of Education.
- Secretary Education accords necessary approval.
- The Curriculum schemes duly approved are passed on to the provincial Textbook Boards for preparation of textbooks.

2.3.2 Higher Levels of Education

The procedures for curriculum development employed at higher levels of education are somewhat different from those of tertiary levels. However, the key components of the procedures at both levels are very similar.

Prior to the constitution of the Higher Education Commission (HEC), the involvement of University Grants Commission (UGC) in the development of curriculum for various discipline was limited to only directive or recommendations for the updating of curriculum, to keep them in line with modern trends. In other words, it was a sole responsibility of the academic departments of the universities. For this purpose each department had board of studies, a statutory body of the department, comprising senior members and the chairman. Considering the needs of the department, the boards used to suggest changes or formulate new course outlines for new subjects in the light of UGC's guidelines. These changes or new formulations were sent to academic council, a higher order statutory body, for discussion and approval.

Soon after the reorganization of UGC as HEC, serious changes took place in the procedures for the development of curriculum/course outlines. However, some of the public universities are still following the same old procedure of curriculum.

The following process is adopted for curriculum review and revision process of the curriculum by the Higher Education Commission, Pakistan. In pursuance of the mandate given under Act of Parliament and recommendations of Vice-Chancellors Committee, HEC launched an extensive program for periodic revision of the content of different subjects taught at graduate and undergraduate levels.

HEC adopted a procedure to review/revise curriculum which ensures the quality of the updated curricula. Following are the steps involved in curriculum review/revision process:

The curriculum review and revision process has been divided into two phases;

- Phase I Curriculum under consideration
- Phase II Circulation of the draft curriculum

Phase I Curriculum under consideration

Step I Constitution of National Curriculum Review Committee (NCRC) in the subject.

The Vice Chancellor Committee of all public and private sector universities, R&D organization, Directorate of all Colleges and industries in relation to the subject matter under

consideration are requested to nominate their representatives for appointment to National Curriculum Review Committee (NCRC).

Step II Assessment Analysis of the existing Curriculum

The existing curriculum is 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 the teaching subjective
- Scheme of studies
- Course content
- Weightage
- Reading material
- Teaching strategies
- Methods of evaluation

Step III NCRC meeting: Draft presentation

The first meeting of the NCRC is organized at the HEC headquarters at Islamabad or at its regional centres at Peshawar, Lahore and Karachi where maximum local input could be made available in the exercise of revising curriculum. Other universities, at different places, may also be chosen to serve the purpose. The meeting which normally runs for 3 days consecutively comes up with a draft for the proposed curricula, after detail discussion and deliberation of the proposal prepared by the NCRC members.

Phase II Circulation of the draft curriculum

Step IV Appraisal of the first draft

The first draft is circulated among the universities, institutions and organizations soliciting their views for its further improvement. The review recommendations collected on the 1st draft curriculum are deliberated upon to design and finalize the curriculum of specific subject of study in a final meeting.

Step V NCRC meeting: Finalization of draft

The second meeting of 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 curriculum. The draft finalized support exercise 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 curriculum designed and printed is sent to the universities for its adoption/implementation after the approval of the Competent Authority.

3. Teaching Approaches

- Lecture
- Discussion
- Application Exercise

4. Learning Activities

The MLs are encouraged to adjust this presentation in accordance with the participants' background and the nature of available resources.

4.1 *Activity 1: Ice-breaking Activity*

The participants will be asked to introduce themselves and share their academic interests (The introduction is desirable since this is the first session of the module)

4.2 *Activity 2: Activating prior Knowledge*

To activate prior knowledge each of the participants may be asked to write an answer to the following question.

- What are the differences between curriculum, syllabus and course?

4.3 *Activity 3: Pair Share Activity*

The participants may be asked to group themselves in pairs to compare their definitions of curriculum, syllabus and course with those listed in the reading materials. The participants will be

invited to share their definition with the total group. The ML will assist the participants to arrive at a consensus about the definitions.

4.4 *Activity 4: Mapping Participant Conceptions*

The participants may be asked to identify the strengths and weakness of the curriculum in vogue in Pakistan. Their response may be displayed through flip charts or multimedia to find out the extent to which the participants agree or disagree.

4.5 *Activity 5: Interactive Lecture*

The ML shall deliver interactive lecture on the “concept of curriculum”. In the course of lecture, the participants may express their ideas or enter into arguments/debate that may help them to clarify their concepts. The lecture shall be comprised of the following topics.

- Meaning of curriculum.
- Models of curriculum development.
- Curriculum development in Pakistan.

The ideas incorporated in the attached reading materials may help the ML to prepare his/her lecture. S/he is encouraged to use additional materials for this purpose, if there is need to do so.

4.6 *Activity 6: Participants to Share their Learned Experiences*

This activity may take the form of question and answer session to clearly understand the concept of curriculum.

4.7 *Activity 7: Application Activity*

Participants will review one of their syllabi and assess its strengths and areas for improvement based on Taba’s model of curriculum below. One course syllabus is a microcosm of a larger curriculum plan for a program of study. Since faculty participants have more control and influence over their own course syllabus, we will use this level to put new learning into practice and the development of new tools for use in the classroom.

For each item below, participants should assess the strength of that element in their syllabus and if in need of improvement make note of what improvement could be made to their syllabus. They can also identify areas in the list below that are missing from their syllabus. This is a first round assessment and they will continue to assess their syllabi as they learn more about each topic. These improvements will be made throughout the remaining sessions of the module.

Taba Model Elements

- **Situational Analysis-** what are the needs of your students and how are they addressed in your syllabus? How do you imagine your students using this knowledge in their future careers and lives? How can your course structure and methods best prepare your students with knowledge, values, and skills that will lead to them to be successful in their futures? What are the “big ideas” or the primary concepts that your students need to understand (this is where you decide priorities so you can give more weight to these in your syllabus/course design)? What skills will serve your students to prepare them for using this knowledge in their careers? [See Focus on Powerful Ideas in the materials section at the end of this module]
- **Selection of Objectives-** Are your objectives/learning outcomes important? Are your objectives well stated? Do you have objectives for each big idea? Do your objectives include skills as well as gaining knowledge? [See What are learning outcomes? in the materials section]
- **Selection and Organization of Content-** What is the strongest content to meet your objectives? Have you sequenced your content in a developmental manner? Have you put more complex ideas later after building a foundation of knowledge and skill or started with a complex idea and piece by piece reveal how the complexity can be understood by building the knowledge around it. Have you spent more time on the big ideas and eliminated less important topics?
- **Selection and Organization of Methods of Teaching.** Have you used a variety of teaching methods? When using lecture will you make that active with questions and discussion? Are there opportunities for students to learn from one another? Are there opportunities for students to apply what they are learning through solving real problems or developing projects that could be used in a real work setting?
- **Evaluation of Learning-** Do you include methods other than just exams to evaluate learning? Have you proposed short assessments throughout the course so that you can determine if the objectives are being met? Are you prepared to view the outcomes of these assessments more as input for your need to adjust how you are teaching than how the students are learning (if the students are not understanding a concept or knowing how to apply it, how can you come back to that topic in a different way?) [See classroom Assessment Techniques in materials section]

5. Summary and Transition

The learning outcomes for this session are to enable the participants to: (1) understand the meaning of curriculum, and (2) develop and justify a model of curriculum development which corresponds to the needs of the universities in Pakistan and (3) to assess their own syllabus along standards of good curriculum design. To do so, the participants were involved in various learning activities including an interactive lecture and application activity. In the next session, we shall be dealing with the idea of 'Plausible Steps in Curriculum Development'.

6. Assessment

Toward the end of the session, the MLs will evaluate through questions, the extent to which participants have achieved the session objectives. The ML may ask the group in summary to define curriculum and syllabus and to identify a model of curriculum design that works as a guide for syllabus development. The ML can also collect the syllabus assessments to review them and to determine how many of the model curriculum components participants could apply to their syllabus.

Session II and III: Plausible Steps in Curriculum Development

1. Session Learning Outcomes

After the completion of this session, the participants will be able to:

- Identify plausible steps to develop curriculum.
- Select and organize curriculum content in accordance with the learning outcomes.
- Identify instructional strategies relating to learning outcomes.

2. Key Concepts and Content

The associated interactive lecture is comprised of the following topics:

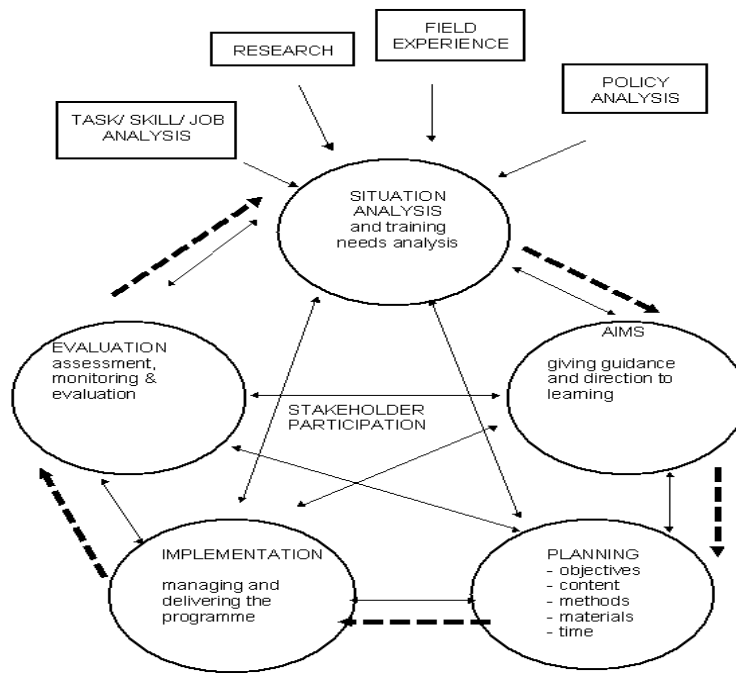
- Identification of learning outcomes
- Selection and organization of content
- Identification of instructional strategies, and
- Curriculum Change.

The following are the key steps in designing a curriculum to promote critical and creative thinking

2.1 *Key Concept: Identification of Learning Outcomes*

Setting intended learning outcomes is the most important part of curriculum development. As curriculum decision-makers, teachers need to know the broader educational context in which they work, as well as their own specific teaching context. In the case of educational objectives, aims, or intended learning outcomes, teachers need to be aware of the sources of those aims and what influences have shaped them. In other words, part of a teacher's professional practice is to define and decide what students ought to learn. As suggested above, such decisions should be based upon an awareness of the requirements outlined in federal policy documents and the particular institution or community setting in which the curriculum implementation will occur. Figure 3 which show how intended learning outcomes relate to the other parts of the overall process.

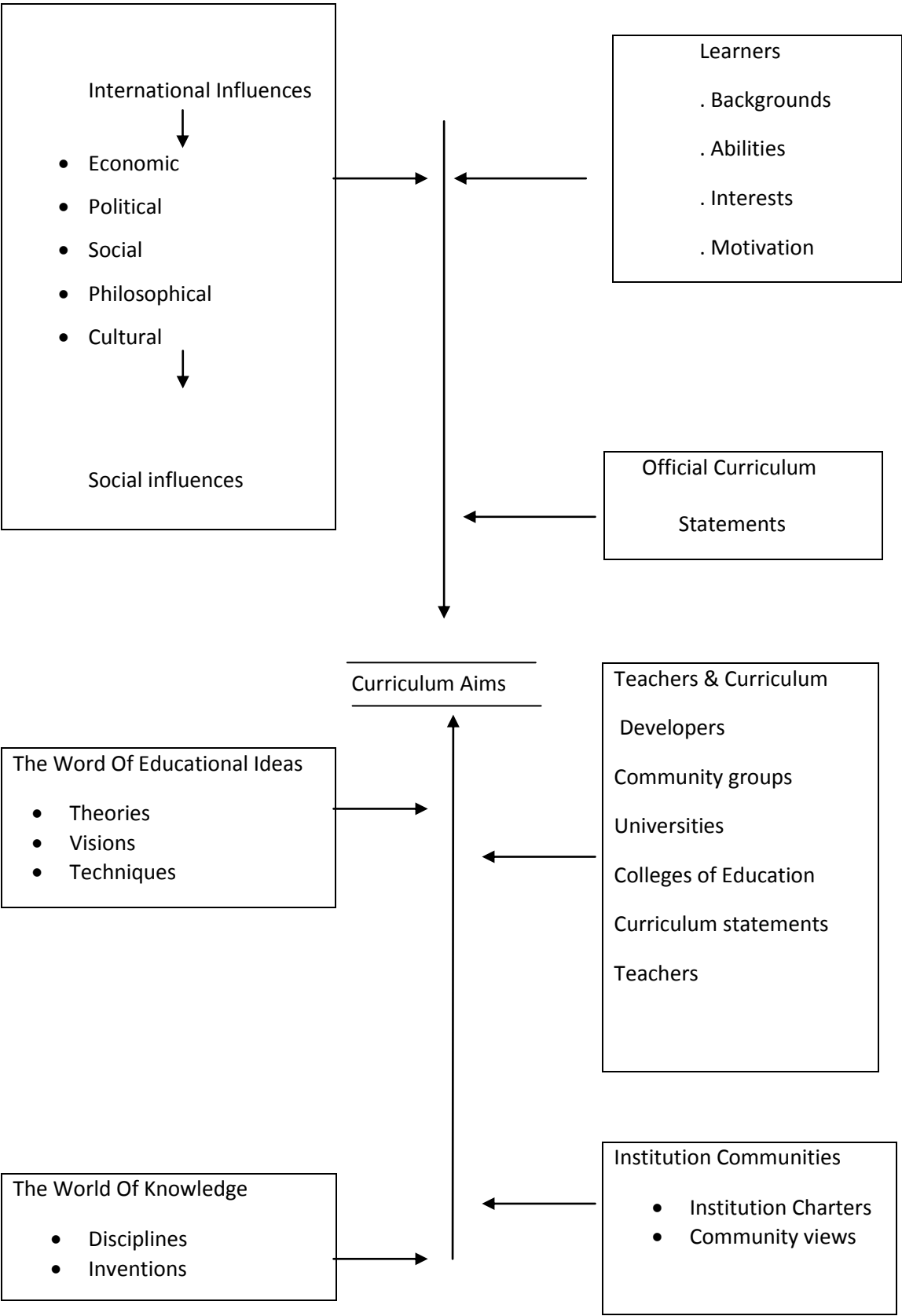
Figure: -3 Intentions and Objectives in the Curriculum Development Process



Since the learning outcome or instructional objectives guides the entire process of education, serious attention must be given to select and identify them in such a way that the teacher is in a position to design appropriate instructional strategies to achieve them. It is for this reason experts have given considerable attention to the criteria for the identification of these objectives or learning outcomes. Despite that there is variation in the criteria proposed by the experts, there is a general agreement that the learning outcomes or the instructional objectives should be: clear, achievable, and important. (For detailed discussion on learning see the reading material relating to session 4).

Figure.4 Some Sources of Curriculum

Figure.4 Some Sources of Curriculum



2.2 Key Concept: Selection and Organization of Content

In the previous section, we discussed the importance of learning outcomes in the process of education. Now we turn to the central question in curriculum development, which is concerned with curriculum content or *what should the institution teach?* There are many answers to this question. In the past, there seemed to be fixed bodies of knowledge included in the curriculum. Since the whole matter of the 'best' knowledge to teach is controversial and problematic, it is desired that in making decisions about content, both curriculum developers and teachers need to know the relationship between objective and curriculum content or knowledge.

2.2.1 Traditional Conceptions of Content and Knowledge

The prevailing method of organizing curriculum content is to group knowledge into subjects or disciplines, something that has been done since the beginning of institutions. Universities have a long tradition of organizing themselves on the basis of disciplines which mark out fields of knowledge that have their own structure and concepts. One of the issues facing teachers and other curriculum developers is the 'explosion' of knowledge which has produced and added a vast amount of knowledge

Why do we have subjects? The simple answer is that there is a centuries-old tradition of subjects which were the collections of knowledge that had coherence. They were linked, as suggested above, by concepts that clustered into meaningful fields of knowledge. Tanner and Tanner say that subjects are a way to facilitate communication and action.

Proponents of the prevailing organization of curriculum content into subjects argue that knowledge should be drawn from disciplines that are well-established.

This discussion on the traditional approach to curriculum content can be concluded by the following points that summaries the main emphases of traditional subjects. The approach emphasizes:

- Standards that the learner should achieve often backed up by tests and examinations.
- Excellence in achievement
- Subjects that are based upon structures of connected concepts and are established subjects
- A sense of unity between subjects that together produce an educated person rationality
- The acquisition of culture, notably 'high' culture through a liberal education.

All of these emphases are open to challenge, of course, yet all of them can to some extent be seen in the emerging curriculum of universities.

Dewey and Whitehead were concerned about taking the separation of knowledge too far, and warned that subjects in the institutional curriculum often became isolated from one another and from life experience, especially the experience of the students. To them life is not compartmentalized in the way that subjects have been compartmentalized. They argued for relevance in the curriculum to connect the institution's studies with life outside the institution through thematic approaches.

Kline made the point that university mathematics scholars may be high on intelligence but not necessarily on wisdom. They ignored the problems of how to teach the subject and how to interest students. Alignment to extreme discipline-orientation is a classic case of emphasizing product and ignoring process. In these circumstances, the content of the curriculum and its acquisition becomes the end or the goal, and the process is neglected. How do teachers change this situation? Tanner and Tanner have identified the following factors that need to be considered to break away from too much emphasis upon product. They argue that teachers have to consider:

- the nature and interests of the learner
- the problems that face society
- the interrelatedness of knowledge
- the continuity between theoretical and applied knowledge
- general education purposes and functions compared with specialized education
- Involvement of communities as well as subject specialists to decide about content

2.2.2 Criteria for Selecting and Organizing Content

Decisions about what contents are to be included in curriculum rest on many things ranging from spur of the moment inspiration or even desperation sometimes to painstaking deliberation. Fortunately, there are criteria that can guide us in this regard. The experts suggest that the content should include the following characteristics:

- validity
- significance

- interest
- learn ability
- Consistency with social reality

The classical problem of curriculum organization, are those of establishing sequence of cumulative learning or continuity, and of integration. Establishing a sequence in curriculum can be viewed primarily as that of putting the content and materials into some sort of order of succession.

Curriculum organization should preserve and protect both the logic of the subject matter and the psychological sequence of the learning experience. No matter how the content is put together, it is important that the basic ideas or the patterns of relationships which are important should not be obscured or falsified. Neither can one overlook the task of making the content learnable by organizing the ways of learning according to a psychological sound sequence, even in curricula in which the learning of content is the sole emphasis.

Perhaps the greater drawback to the usual organization of learning is the lack of focus. Whether the curriculum is organized by subjects, by topics, or by units, one frequent characteristic is its vague nature which makes it difficult to decide which dimensions are important to pursue, which relationship of facts and ideas should be submerged, and which one should stand out. To resolve it, it is imperative to decide which element of curriculum can serve as a centre of organization. Since as one formulates the central or core ideas to pursue can one speak of an organizing focus for study. The logic of the core or central ideas or big ideas about the topic, a subject, or a problem actually determines which dimensions of a problem actually determines which dimensions of a topic need emphasis, which details are relevant and which not, and in which relation they are significant.

Usually core ideas as focusing centres serve several important functions. Some of these functions are itemized below.

- First they structure the units or the topics of the subject by giving them a perspective of the dimensions of the content to be treated. If these dimensions are clear, it is possible to make intelligent judgments regarding which details to include, as well to sample content on a rational basis (by its logical dimensions).
- Focusing the unit on core ideas will assure a fuller scope for the development of the content.
- Using ideas as centres of organizing content will also help with the problem of “coverage, the setting of limits to the amount of detail that must be studied. If certain basic ideas are treated as the core of content it would seem important to cover these ideas, but the detail could be minimum necessary for understanding, or developing the core idea.

- “covering” ideas but sampling detailed content releases time from unproductive mastery of details and makes it available for a more thorough study of that which is offered and for emphasis on such objectives as learning how to handle resources, interpret data, and develop and apply generalizations.
- Finally, ideas as focusing centres can serve as threads for either a vertical continuity or a horizontal integration. They can provide the structure for comparing and contrasting learning experiences which otherwise bear no similarity to each other.

2.3 *Key Concept: Identification of Instructional Strategies*

Besides objectives and the content, the curriculum should include general suggestions as to the kinds of instructional strategies suitable to achieve the objectives, leaving the specifics to the teachers. We know that not all individuals learn most effectively by the same method, by the same type of activity, or by using the same media. One student may successfully master generalizations about health or about growth of a plant from a book; another may get the same thing more effectively from observation or experimentation. While some students are stimulated to thought by books, others need group discussion to accomplish the same end by composing a summary chart.

Different individuals also need different types of learning activities for their self development. A shy person needs experience in group participation. A person given to overgeneralization needs the corrective experience of analyzing precise data, and drawing accurate inferences from them. The wider the range of learning techniques which an individual masters, the better equipped s/he is for continuing to learn after formal schools has ceased.

All this seems to suggest that a balanced array in modes of learning and in the conditions under which learning takes place is required if there is to be equality of opportunity to learn. What, then, are the kinds of balance that need to be **considered?** Learning activities need to represent a balance of various means of learning: reading, analyzing, doing research, observing, writing, experimenting, manipulating and constructing. Too often there is a tendency to depend more or less exclusively on one mode of learning and thus to limit the scope of learning. Often either the traditional means, such as reading books, or some new dramatic teaching technique, such as group discussion, tend to dominate. Such a dependence on one way of learning deprives some students of an adequate access to learning.

A balance is needed also between experiences or activities that represent “intake” and those that represent synthesis, reflection and expression. Too long a stretch of absorbing new information is bound to result in the erosion of the previous learning by the new. An appropriate rhythm of absorbing and coordinating, internalizing and reorganizing seems to hold a much greater possibility. It incorporates the idea of intake and of feedback and utilizes what is known about dynamics of creative learning.

Providing a rationally balanced variety of learning experiences not only increase the capacity to learn and motivation for learning, it is also one way of deciding with the problem of individual differences and heterogeneity. It is quite possible that making a greater range of means of learning available will also extend the capacity to master the content and to develop the powers of thought and feeling in individuals now deprived of mastery.

Keeping in view the objectives of curriculum the teachers may develop an eclectic strategy from the following models of teaching

2.3.1 Models of Teaching

Subject-matter based models

- Inductive thinking (Taba).
- Inquiry training (Suchman).
- scientific inquiry (Schwab)
- cognitive growth (Piaget)
- advance organizer (Ausubel)
- non-directive teaching (Rogers)
- classroom meeting (Glasser)

Social Interaction Models

- group investigation (Dewey)
- social inquiry (Massialas and Cox)
- jurisprudential (Oliver and Shaver)
- role playing (Shaftel and Shaftel)

Behavioural Models

- contingency management and self-control (Skinner)
- assertiveness training (Wolpe and Lazarus)
- direct training (Gagne)

2.3.2 Teaching Effectiveness Factors

Some of the research based recommendations that have consistently proven to be effective and efficient in the implementation of teaching strategies are outlined below:

- emphasis by the teacher on clear, explicit academic goals that students understand
- high expectations of students by the teacher
- clear teacher explanations of the learning tasks
- effective teacher questioning to monitor student progress and understanding
- time allocation for students to practice examples, and prompts and feedback are provided and errors corrected
- the teacher strives for over-learning
- the teacher reviews achievement regularly and stresses student accountability

These factors are, it seems, tending to define a particular style of teaching based upon a fairly structured, directive, formal classroom. That is because most of the research has been about academic achievement. Brophy identified yet more factors from research into better student achievement. Students learn more when:

- their teacher covers more content
- they are on task for a high proportion of lesson time
- they experience continual success
- their teacher actively teaches them rather than sets them work to do on their own without direct supervision
- their teacher structures information so that it is clear, using techniques such as reviewing points, giving clear instructions, and enthusiasm teacher questioning is effective, including the frequent use of questions within the grasp of the students, the use of wait time and giving students a chance to elaborate on answers

2.4 *Key Concept: Curriculum Change*

From time to time revisions are made in curriculum and in recent decades there has been a system of 'rolling' revision under which each subject is reviewed and revised independently of the others. The HEC have heralded a new era with the development of a new national curriculum statement encompassing all subjects the establishment of bodies which must accept major responsibility for teacher development and institution innovation.

But how does the curriculum change? What are the processes at work? To answer these questions, some of the recent theoretical ideas in change theory and organizational management are needed.

Perhaps the first requirement of a strategy for curriculum change is to differentiate between curriculum improvement and change. As currently managed, curriculum improvement means changing certain aspects of curriculum without changing the fundamental conceptions of it or its organization. Improvement consists mainly of an extension of the existing conceptions of the curriculum and its organization. A different problem altogether is posed in producing changes in the current curriculum scheme: in the way of organizing it, in ideas about what its content, its scope, and its sequence should be.

An effective strategy of curriculum change must proceed on a double agenda, working simultaneously to change ideas about curricula and to change human dynamics. To achieve both, the strategy of curriculum change requires a methodology, which may be summarized as follows:

- Curriculum change requires a systematic sequence of work which deals with all aspects of curriculum ranging from goals to means. A piecemeal approach, no matter how effective, does not produce sufficient change either in thinking about the curriculum or in the actual practice. A planned strategy, thus, must establish a sequence of steps or tasks in effecting curriculum change. Constructing this strategy involves the following kind of question: in initiating curriculum change, where does one begin? What is the order of step or tasks that must be followed by a given working team either on a segment of the curriculum, or in developing a total plan?
- A strategy for curriculum change involves creating conditions for productive work. Under what conditions does productivity flourish or languish? What processes need to be employed to enhance creative productivity? What are the guiding principles for the ways of working?

Which human relations factors operate, and how does one deal with these? What role do such devices as committees, study groups, individual experimentation, and work teams play and how do these means operate in the various sequential steps?

- Effecting curriculum change involves a large amount of training, new skills need to be learned, new cognitive perspective must be acquired, and new modes of thinking need to be initiated. Since, as pointed out above, curriculum decisions, no matter what their scope, require applications of theoretical principles, what balance of theoretical insight and practical know-how is needed? What kind of training does that imply, and how and when should it be provided? What is the role of research and experimentation in this training?
- Change always involves human and emotional factors. To change thinking about curriculum one needs to change people's attitudes toward what is significant and perception about role, purpose, and motivation. To effect changes means to destroy dependencies on previous habits and techniques of work, with whatever personal meanings these have. To work in groups means to learn new group techniques.
- Since curriculum development is extremely complex, it requires many kinds of competencies in different combinations at different points of work. These competencies need to be organized into effective working teams so that all resources are made available. Who should be involved at what points? What should be the roles of administrators, curriculum specialists, content specialists, specialists in group dynamics and research, laymen and students? To develop an adequate use of the manifold talents and resources, it is necessary to practice the principle of levels of involvement. Not every type of competency is relevant at every point of curriculum development. Not everyone needs to participate in everything.
- Managing curriculum change requires skilled leadership. It also requires distributed leadership. What are the chief attributes of such leadership? Who can assume which leadership roles? How do these roles change at various stages of the process? What are the ways of extending leadership roles? What is to be relationship between the official position and leadership roles? How self-sufficient is an institution system? What resources in

leadership roles must the institution draw from outside? How should it use these outside consultants?

These are but a few of the questions involved in planning strategy for curriculum change.

3. Teaching Approaches

- Lecture
- Discussion
- Group Work
- Application Activity

4. Learning Activities

The MLs are encouraged to adjust this presentation in accordance with the participants' background and the nature of available resources.

4.1 *Activating Prior Knowledge*

To activate prior knowledge each of the participants may be asked to write answers to the following question.

- What constitutes a good curriculum?
- What procedure should we follow to develop university level curriculum?

Note: the responses of the participants may be polled to discover total group views about a good curriculum and the steps to develop it.

4.2 *Mapping Participants' Concepts*

The participants may be asked to identify the strengths and weakness of instructional strategies being implemented in universities of Pakistan. Their response may be displayed through flip charts or multimedia to find out the extent to which their conceptions are similar one another.

4.3 *Interactive Lecture*

The ML shall deliver interactive lecture on the “concept of curriculum”. In the course of lecture, the participants may be allowed to express their ideas or enter into arguments/debate that may help them to clarify their concepts. The lecture shall comprise the following topics.

- Identification of learning outcomes.
- Selection and organization of content.
- Identification of instructional strategies.
- Curriculum change.

The ideas incorporated in the attached reading materials may help the ML to prepare his lecture. He is encouraged to use additional materials for this purpose, if there is need to do so.

4.4 *Participants to share their learned experiences (Group Activity)*

The participants may be divided in four groups each group may be given one of the following topics for discussion.

- Characteristics of learning outcomes.
- Criteria for the selection and organization of learning content.
- Procedures for the selection of instructional strategies.
- Kinds of changes required in university level curriculum of Pakistan.

Having done so, the members of each group will select their team leader who will record the ideas of the group members and assist them in arriving at a consensus. Then the members of each group will go through the given written material and list the ideas relating to the topic and share them with the group members for consensus to share the ideas of their groups with the total group, the team leader of each group will be invited to conduct the session in an interactive way. The ML will act as a facilitator during this activity.

4.5 *Application Activity*

Ask participants to revisit their assessment of their syllabus. First, do they want to adjust their assessment any after the learning that has just occurred. Then, ask participants to look at the Core or Big Ideas in their syllabus. Have they captured the big ideas and properly emphasized them with development time in the course calendar?

Participants will come up with new ideas for the Core Ideas, and they will rewrite learning outcomes to be more focused on the core ideas. They will also determine what teaching strategies

they will use. After working independently on their own syllabus, they will share their ideas in small groups and ask for feedback from their colleagues. At the conclusion of this activity, each participant will again have time to work independently on Core Ideas, learning outcomes, and teaching methods and will make any additional changes to the working draft of their syllabus now with benefit of feedback from others.

5. Summary and Transition

The learning outcomes for this session were to enable the participants to: (1) Identify plausible steps to develop curriculum, (2) select and organize curriculum content in accordance with the learning outcomes, (3) identify instructional strategies related to learning outcomes, and (4) to practice applying new learning to the continuing upgrading of their own syllabus. To do so participants were involved in various learning activities including an interactive lecture and application activity. In the next session, we shall be dealing with the idea of “Comparing various systems of examinations, particularly system’.

6. Assessment

Towards the end of the session, the ML will informally evaluate the extent to which the participants have achieved the session objectives. MLs will ask participants to identify the “muddiest point” in the session. The ML will begin the next session by reviewing the points that came up as unclear to participants.

Session IV: Student Assessment

1. Session Learning Outcomes

The learning outcomes for this session are to enable the participants to:

- Describe and exemplify the importance of variety of tests to assess student's academic performance.

2. Key Concepts and Content

2.1 *Key Concept: Definition of Assessment*

Assessment is a process by which information is obtained related to some known objective or goal. According to the “**Oxford Dictionary**”, the term refers to “**Evaluate or Estimate the nature value or quality of something**” Almost all dictionaries of English language define assessment in the same manner. The term frequently used as synonymous to assessment is evaluation. For instance, the Webster Dictionary defines evaluation as “To determine the significance worth or condition of something usually by careful appraisal and study”.

The use of dissimilar words in the two definitions seems to suggest difference in the significance. But for the purpose of this module we will use evaluation and assessment as equivalent terms having similar or same meaning. Keeping in view the purposes of assessment, a difference is made between process and product assessment. The former is referred to as **formative assessment** and the later as **summative assessment**. Formative assessment is a method of judging the worth of a program while the program activities are forming or happening. Its focus is “**Operation**”, while summative evaluation refers to procedures of judging the quality or value of the results of a program **i.e. it focuses the Outcomes**.

The above specified distinction between process and product evaluation has been introduced here primarily in hopes of bringing the evaluation process closer to the teaching and learning processes. Too, often in the past, evaluation has been entirely summative in nature taking place only at the end of the unit, chapter course or semester when it is too late at least for that particular group of students to modify the process.

Summative evaluation has its primary goals as grading or certifying students, judging the effectiveness teacher of and comparing curricula. Some teachers apply program summative evaluation rather frequently. They may wish to grade student performance every few weeks or at

the end of each chapter or unit of instruction. This intermediate assessment can be distinguished from evaluation that takes place at the end of a much longer period of time such as a course or semester. Longer-term summative evaluation determines the extent to which a student has realized the entire range of outcomes. Intermediate summative evaluation in the other hand, is concerned with more direct, less generalizable and less transferable outcomes.

The primary purpose of summative student evaluation, intermediate or long-term is to collect information about student learning to make judgment about their levels of achievement, and to use these judgment in making education or curricular decisions. For this purpose information is collected by teachers in many ways and precision is one of the key issues in the acquisition of such information. Sometimes there are clear measurement instruments or scale which may tell us that Aslam got six correct answers out of ten. In such cases little interpretation is needed. We can be sure about these results and say that Aslam scores better or worse than other students on the same test.

Formative evaluation as the name implies intervenes during the formation of the student, not when the process is thought to be completed. It points to the areas of needed remediation so that immediately subsequent instruction and study can be made more pertinent and beneficial.

However, under many circumstances no such tools are available to use hence teachers need to resort to subjective judgment on the basis of the information they have. In the above paragraph, the term measurement has been used to collect information about something by means of instruments or scales and evaluation was referred to as judgment on the basis of such information **i.e.** measurement is a sub-activity of evaluation. In other words, measurement is the gathering of information part of the process of assessment. This distinction between the two implies that measurement requires objectivity and evaluation or assessment is subjective decision or view based on measurement or information. Evaluation requires both criteria which guide judgments and the specific information that bears on the specific criteria.

Judgments such as "good-bad," "like-dislike", and 'desirable-undesirable' are constantly being made by all of us. We have difficulty refraining from making a judgment about anything that comes within our view, whether it is a person, a thing, an idea, or a situation.

In every class during every lesson, teachers evaluate their students. They do this spontaneously without the intrusion of anything that would normally be called a test. Often the teacher's cue is a momentary facial expression, a tone of voice, a shift in posture; at other times, of

course, he takes account of children's answer to questions. These cues, which Jackson have aptly called the ' language of classroom behaviour, "continually tell the teacher how well he is communicating with the students. These spontaneous judgments fit neatly our definition of formative evaluation; they are assessments made while teaching is in progress for the purpose of guiding that teaching. Without them teaching could hardly be called teaching.

However, because this type of evaluation is unplanned, it is different from the systematic and quantitative types of evaluation-placement, formative, diagnostic, and summative-proposed. This is not to suggest that spontaneous, informal evaluation is of little worth or that there is any basic contradiction between informal and formal evaluation. Our point throughout has simply been that informal evaluation should be supplemented by more systematic sorts of evidence gathering.

The busy teacher, however, responsible for the varied work of a large and varied class, can hardly be expected to have the time, energy, or expertise on his or her own to specify all the objectives and develop all the techniques and instruments necessary to evaluate adequately all aspects of student learning. The purpose of this session is to describe how the full range of techniques needed for a system of evaluation can be developed with only a minimum of demands on any individual teacher.

2.2 *Key Concept: Various Types of Student Assessment*

Examination, tests and assignments are the most commonly used approaches to evaluate in higher education. Negotiated and computer-based evaluations are emerging approaches that are gaining popularity among some disciplines.

Examination: "A formal test of somebody's knowledge or ability in a particular subject especially by means of written questions or practical exercise" or "The action of inspecting somebody in detail". To examine somebody or something is to inspect it closely; hence, an examination is a detailed inspection or analysis of an object or person.

In an academic or professional context, examinations are tests which aim to determine the ability of a student or a prospective practitioner. Exams are usually written tests, although some may be practical or have practical components, and vary greatly in structure, content and difficulty depending on the subject, the age group of the tested persons and the profession. A person who passes an examination receives a diploma, a driving or professional license, depending on the examination's objectives. A competitive examination is an

examination where applicants compete for a limited number of positions, as opposed to merely having to reach a certain level to pass.

Tests: Systematic procedures devised to sample and measure relevant knowledge and skills. Tests are standard set of questions to be answered. As a result of persons answer to such a series of questions we obtain a measure (that is a numerical values of a characteristics of that person). Tests are tool of measurement.

A test is an assessment, often administered on paper or on the computer, intended to measure the test-takers' or respondents' (often a student) knowledge, skills, aptitudes, or classification in many other topics (e.g., beliefs). Tests are often used in education, professional certification, counselling, psychology (e.g., MMPI), the military, and many other fields. The measurement that is the goal of testing is called a test score, and is "a summary of the evidence contained in an examinee's responses to the items of a test that are related to the construct or constructs being measured. Test scores are interpreted with regards to a norm or criterion, or occasionally both. The norm may be established independently, or by statistical analysis of a large number of subjects.

A standardized test is one that is administered and scored in a consistent manner to ensure legal defensibility. A large proportion of formal testing is standardized. A standardized test with important consequences for the individual examinee is referred to as a high stakes test.

The basic component of a test is an *item*, which are stored in an item bank. Items are often colloquially referred to as "questions," but not every item is phrased as a question; it may be such things as a true/false statement or a task that must be performed (if a performance test).

Classroom Assessment An increasingly popular form of informal assessment is called Classroom Assessment Techniques. These are specific short techniques that can be applied in a classroom situation to see how well the class is doing at achieving the objectives for a lesson. Often the techniques takes 5 minutes or less to implement and gives the teacher useful information about what learning objective needs to be emphasized more, revisited, explained in a different way, or requires more application time with students. An example of a classroom Assessment Technique, sometimes referred to as CATs, is to ask students to

identify the muddiest point in a lecture on a concept that was just given. See Materials section for a handout on Classroom Assessment Techniques.

Additional techniques are available through searching the Internet at sites such as:

<http://www.ntlf.com/html/lib/bib/assess.htm>

<http://fod.msu.edu/oir/index.asp>

2.3 *Key Concept: Kinds of Tests*

2.3.1 Classification by the nature of test items

- a. Subjective
- b. Objective

2.3.2 Classification by the purpose of use

- a. Criterion- referenced
- b. Norm-referenced

2.3.3 Classification By professional acceptability

- a. Formal.(standardized)
- b. Informal

2.3.4 Functional Classification

- a. Informal and Standardize tests (classification by professional acceptability).
- b. Mastery survey or diagnostic tests
- c. Speed vs. Power tests
- d. Criterion referenced vs. Norm-referenced tests (classification by the purpose of use).
- e. Objective vs. Subjective (classification by the nature of test items).
- f. Problem situation tests

Assignments: Assignments are unsupervised piece of work that often combines formative and summative assessment tasks. They form a major component of continuous assessment in which more than one assessment item is completed within the semester. Any of the methods

of assessment below can be set as assignments although restrictions in format, such as word practicality, Limits and due dates, are often put on the assessment task to increase their

Negotiated: Negotiated assessment involves agreements between staff and students on issues associated with learning and assessment .The most common negotiated method is to develop written learning contract that outlines the conditions of assessments

Computer-Based: A Computer-Based Assessment (CBA), also known as Computer-Based Testing (CBT), e-exam, computerized testing and computer-administered testing, is a method of administering tests in which the responses are electronically recorded, assessed, or both. As the name implies, Computer-Based Assessment makes use of a computer or an equivalent electronic device (i.e. handheld computer). CBA systems enable educators and trainers to author, schedule, deliver and report on surveys, quizzes, tests and exams.

Computer-Based Assessment may be a stand-alone system or a part of a virtual learning environment, possibly accessed via the World Wide Web.

Different methods of assessment provide the means of ensuring that students are able to demonstrate the range of their abilities in different contexts. Stiggins groups the different methods of assessment into 4 main categories: selected Responses; Essays; Performance Assessment and Personal communication. Each category has advantages in assessing different learning outcomes. For example, a selected responses assessment task, such as a series of multiple-choice questions, is able to assess all areas of mastery of knowledge but only some kinds of reasoning.

3. Teaching Approaches

- Lecture
- Discussion
- Group Work
- Application Activity

4. Learning Activities

Note: The implementers of the module are encouraged to adjust this presentation in accordance with the participants' background and the nature of available resources.

4.1 *Learning Outcomes*

The participants will be able to:

- Describe and exemplify the importance of a variety of tests or strategies to assess students' academic performance.
- Develop a Classroom Assessment Technique to use in their classroom
- Determine a set of assessments/evaluation strategies for their course to include in the working draft syllabus

4.2 *Ice-breaking Activity*

Paper "famous failure" will be distributed. (Materials section)

4.3 *Activating Prior Knowledge*

State the assessment weaknesses that you have felt in the paragraph "famous failures."

4.4 *Pair and Share Activity*

The participants may be asked to group themselves in pairs and share with their partners the merits and demerits of various types of Assessment and for what purposes to use them. They could create a chart on this comparison that they can use in their work.

4.5 *Interactive Lecture*

The ML shall deliver interactive lecture on the "Concept of Assessment". In the course of lecture, the participants may be allowed to express their ideas or enter into arguments/debate that may help them to clarify their concepts. The lecture shall comprise the following topics.

1. Definition of assessment.
2. Various types of student assessment.
 - a. Examination
 - b. Tests
 - c. Assignments
 - d. Classroom Assessment
 - e. Negotiated

- f. Computer-based
3. Kinds of tests

The ideas incorporated in the attached reading materials may help the ML to prepare his lecture. He is encouraged to use additional materials for this purpose, if there is need to do so.

4.6 *Group Activity*

Instructions:

1. Participants to divide into three groups
2. Select group leaders
3. Responsibilities of group leaders include:
 - a. Record ideas
 - b. Help group members to arrive at a consensus
 - c. Present the group consensus by the leader

Questions for the groups are:

Group 1: Discuss and conclude that what types of assessment are suitable for various disciplines and why?

Group 2: Ascertain the extent to which various systems of assessment reflect the true academic abilities of students and defend your position in this regard?

Group 3: Determine if an assessment result is more of a reflection on the student or the teacher and why.

To share the ideas of their groups with the total group, the team leader of each group will be invited to conduct the session in an interactive way. The ML will act as a facilitator during this activity.

Application Activity:

Classroom Assessment Techniques

If you can access the Internet reliably, show the video entitled Classroom Assessment Techniques: A teaching and learning video vignette presented by Shaun Longstreet. It is available at YouTube at: <http://www.youtube.com/watch?v=g4ogt0yI8xA>

Participants will group together to develop at least one Classroom Assessment Technique and more if time permits. They will then present their ideas to the whole group

Also participants will review their working draft syllabi and make and improvements to their strategies for evaluating and assessing. After working independently on their upgrades, they will share their ideas with a small group and elicit their feedback. They can then return to work independently to make any final adjustments to their assessment approaches noted in their syllabus.

Resources:

- Reading Material
- Multimedia
- Posters/charts

5. Session Summary and Transition

The learning outcome for this session was to enable the participants to describe and exemplify the importance of a variety of test to assess students' academic performance and to apply their knowledge of assessment to their draft syllabus. To do so the participants were involved in various learning activities including an interactive lecture and applications activities. In the next session, we shall be dealing with the idea of “Learning Outcomes and Table of Specification’.

6. Assessment

The learning outcome for this session was to enable the participants to describe and exemplify the importance of a variety of test to assess students' academic performance and to apply their knowledge of assessment to their draft syllabus. To do so the participants were involved in various learning activities including an interactive lecture and applications activities. In the next session, we shall be dealing with the idea of “Learning Outcomes and Table of Specification’.

Session V: Learning Outcomes and Table of Specification

1. Session Learning Outcomes

The learning outcome for this session is to help the participants to:

- Conceive of learning outcomes
- Design table of specification in accordance with the outcomes.

2. Key Concepts and Content

- Defining Objectives
- Designing Table of Specification

The premise central to this module is that education is a process which helps the learner to change in many ways. Some change approaches are intentional, others quite unintentional. Given this premise, then one of the principle tasks of university administration and teachers is to decide, as far as is possible, how they want the student to change and what part they can play in assisting him or her in the process. A second task arises both as instruction unfolds and upon its completion, that is to determine whether the student has changed in the desired ways and to try to define what kinds of unanticipated outcomes have been achieved.

The ways in which university officials would like to see the student change constitute the educational objectives or goals of instruction. These do not, however, comprise all of the outcomes of instruction since it is quite impossible in most subjects to anticipate the full range of results. As the course progresses, unanticipated outcomes, some positive, other unfortunately negative, often accrue. Some of these quickly become apparent, others may go unrecognized. Attempts to specify all the outcomes in advance can have a restrictive influence on both teaching and evaluation. This can happen if a teacher gets the mistaken impression that only the planned results are important and either neglects other outcomes in his teaching or evaluates only those explicitly detailed in advance.

This is not to imply that careful consideration should not be given before instruction to what outcomes are possible, desirable, and thus systematically to be sought; on the contrary, that is an essential step in instruction and evaluation, and this section deals with how to formulate maximally useful statements of educational objectives and the evaluation procedures based on them. However, it is important to realize also that other significant outcomes will become evident as instruction

proceeds, and the teacher should be alert to such possibilities. We shall deal more directly in this module with the evaluation of anticipated goals.

In the planning of educational objectives, decisions must be made about what is possible and what is desirable.

2.1 *Key Concept: Defining Objectives*

The teacher concerned with good instruction and evaluation faces the following basic tasks, each of which necessitates a clear statement of objectives also known as learning outcomes:

1. She or he must decide upon the goals and summative objectives he hopes to obtain at the end of his course.
2. She or he must select commercially available materials (textbooks, teacher guides, videos, topics, etc.) or him/herself create materials to provide the learning experiences which will help the student attain these goals. This involves developing formative objectives.
3. She or he must provide continuity and sequence to help the student integrate sometimes apparently isolated experiences.
4. She or he must measure or evaluate the student's performance in relation to the goals originally chosen.

How does one go about stating an educational objective? A statement of an objective describes the way in which students are to be changed by their interaction with the process and materials of instruction. It should be expressed in terms of desired student behaviour and content areas.

There has been considerable disagreement over the degree of specificity or level of precision necessary in the statement of an objective. We should hold that this should be determined at least partly by the learning experiences planned for the student and partly by the generalizability of the behaviour sought for. If the student is expected to interact almost exclusively with learning materials contained in a programmed text or computer, then the objectives must be stated very specifically. This is true if for no other reason than that such material cannot be built without a detailed task description. However, as the variables in the learning situation increase (teacher, number of students, and type of materials among others), it becomes more difficult to arrive at highly specific formulations.

Statements of the objectives hoped for/planned for by the end of course or year would transcend the particulars of the content used during instructions and instead describe more generalizable and transferable or long range skills. For example, “analysis of dramatic works” may be a long-term objective. Notice the statement refers to all rather than to any single dramatic work. In order to achieve this aim, the teacher will undoubtedly start out with a particular play, perhaps one in which the development of plot and character are sharp. She or he then may proceed to another and more complex work. However, the objective is the ability to analyze many types of dramatic works, not merely the two or three studied in class, which is a long range objective.

The following are statements of long-range objectives:

- The ability to apply social science generalizations and conclusions to actual social problems.
- The ability to present ideas (orally or in writing) in accordance with the principles of grammar.
- The ability to apply principles of propaganda to political arguments.
- The ability to apply the principles of number system.
- The ability to relate principles of civil liberties and civil rights to current events.

Each of these statements subsumes several major principles and literally millions of possible applications of them. The objectives imply that though the student was given practice in the various principles on only a small number of illustrations, this should result in him/her acquiring the more generalizable and transferable skills associated with the higher mental processes described above.

The specificity of the content and behaviour of the skill can vary, of course. Occasionally the content description of a long-term objective is relatively detailed. This is particularly true of courses that are sequential and therefore require knowledge or comprehension of specifics to build on perhaps in hopes of subsequently developing more generalizable skills. Further, if the subject is viewed as more or less closed and not likely to change much in the future, the objectives may stress knowledge or comprehension. If on the other hand, the content of the discipline is expanding rapidly, then the aims may stress transferable competences. Ultimately, of course, the generalized behaviour described in statements of long-term objectives must be operationalized for evaluation purpose. Some would do this by indicating precisely the ends of evidence they would accept as establishing

the presence of the behaviour. As mentioned above, the National Assessment Project uses this technique.

Describing observable manifestations of the general aim ensures that teachers are in fact communicating with one another about the same outcome. For example, a fairly common statement of an objective in political science is that **“The student understands the Two Nation Theory.”** The behaviour sought for is that the student understands the content, two nation theory. However, if this objective was given to a large group of political science teachers and they were asked to tell what evidence they would accept that the student “understands,” there would be almost as many interpretations as teachers. Some would accept the student’s ability to recite the content of an article on two-nation theory. As evidence of understanding, whereas others would ask that she or he applies the principles to situations not previously encountered in class work. If the word “understands” were used alone, without further specification, two teachers in adjoining classrooms could think they were attempting to realize the same objectives when in fact both the desire and the actual student outcomes in the two classes were entirely different. Thus, in discussing a supposedly common objective, two teachers might very well engage in conversation without communication.

The reason for the failure in communication is that many words teachers use to describe student behaviour are subject to various interpretations. The following are the examples of such terms.

- | | |
|----------------------------|--------------------------|
| 1. Knowledge | 9. Learns |
| 2. Comprehension | 10. Respects |
| 3. Critical Thinking | 11. Expands his horizons |
| 4. Understanding | 12. Works effectively |
| 5. Appreciation | 13. Speaks effectively |
| 6. Has an interest in | 14. Speaks correctly |
| 7. Fully appreciates | 15. Reads with ease |
| 8. Grasps the significance | 16. Uses basic skills |

The difficulty with terms such as the first eleven listed above is that the behaviours involved cannot be directly observed. One cannot see “understanding” or observe “critical thinking” or hear or feel “appreciation.” The presence or absence of such actions can only be inferred from an overt observable performance or manifest product of the students. One says in effect. “If I observe the student doing a certain thing after instruction that they could not do before, I will call this action

knowledge. “Similarly, one might say, “I will accept this product of the student’s as evidence of the student’s existence of critical thinking.”

In examples 13 to 16, while the behaviour is observable in that one can directly witness reading, speaking and working, misinterpretations arise because of the modifier or object of the verb. The criteria for correctness effectiveness and ease differ from person to person, as does the meaning of “basic skills.”

To define objectives so that they are not open to multiple interpretations involves translating the verbs that are open to inference into action verbs that entail direct observation and, when appropriate, specifying the criteria to be used in interpreting adverbs. The overt behaviour or the procedure for observing it must be described so that all who read the description can agree whether or not a given student’s performance or product testifies to the presence of the objective in question.

Thus, while “understands, “appreciates,” “learns,” and the like are perfectly good words and can be used in an initial general statement of an objective. They should be further clarified by the use of active or operational verbs not open to misinterpretation. The following are examples of such “point-at-able” verbs.

1. To state
2. To recognize.
3. To distinguish true statements from false.
4. To match dates with battles.
5. To put into one’s own words.
6. To evaluate.
7. To predict.
8. To volunteer answers.
9. To use conventional grammatical forms.
10. To punctuate according to conventional rules.
11. To compute.
12. To select correct answers from several alternatives.
13. To take out library books about the Civil war.
14. To name the instruments in a band.
15. To state relationships existing between data.

16. To list the consequences of a course of action

These verbs describe what the student does to demonstrate that he has achieved the objective in question. Any intelligent person, given the opportunity to observe his performance can decide whether what he is doing or has produced is acceptable evidence that the objective has been realized. When there is reliable agreement among readers on the behaviours that are acceptable, then the objective has been satisfactorily stated. Again, it must be borne in mind that the use of action verbs does not by itself mean the objective is desirable or possible.

The action verb used to specify one's objectives can help determine the instruction sequence and the evaluation procedures to be used. For example suppose the objective is stated, "The student has knowledge of the decimal system." Until "has knowledge" is further defined, this objective is subject to various interpretations. One teacher might decide that she or he will accept as evidence of knowledge the student's ability to write numerals in expanded notation. Another teacher may expect the student to be able to perform addition operations involving carrying in bases other than ten.

The first teacher might want the instruction sequence to emphasize practice in breaking numerals into units, tens, hundreds, and onward. Using exponential notation for each position, the evaluation procedure might simply present the student with a set of numerals and ask him or her to write them using expanded notation. The fact that a place system will work with any base need not be taught and other bases need not be introduced. The behaviours sought by the second teacher would call for practice in a system of notation with a different base, say, base two or seven, as well as in addition. The evaluation procedure might require the student to perform addition which involves carrying on a set of numerals in a base not specifically studied, say, base three. The point is that since the behaviours accepted as evidence of knowledge differ, the instruction sequences will probably differ, as will the situation planned to allow the student to demonstrate his mastery of the objective.

It should be pointed out that a teacher might define "has knowledge" by using not one but multiple action verbs. For example, the broadly stated objective "The student has knowledge of the causes of the independence of Bangladesh" might be further specified as follows.

- The student can list the causes of the Indo-Pakistani War.
- The student can distinguish true causes from false ones.
- The student can explain the causes in his/her own words.

Since these behaviours appear to differ, each should be considered separately in planning instruction and evaluation outcomes. Whether in fact they are separate behaviours may be determined from an inspection of how a student performs on items designed to measure each of the three.

In addition to describing behaviour in terms of operational verbs, some would urge even further specification in the stating of objectives. For example, two additional characteristics of a good statement have been pointed out by Mager. The first of these is that the important conditions under which the behaviour is expected to occur are described. Consider this objective: "Given a sketch and map of the world, the learner must be able to correctly mark the ocean currents with arrows on the map." Here the details of the evaluation situation and what is expected of the student in it are contained in the statement of the objective.

The second characteristic Mager requires is a designation of how accurate the performance must be. Thus the previous objective could be further clarified by stating it this way: " Given a sketch and map of the world, the student must be able to correctly mark six ocean currents with arrows on the map in a fifteen-minute time period." Here the number of correct responses is indicated along with the time in which the student must finish. A minimal acceptable performance is described, giving further specificity to the statement of the objectives.

It is not necessary of course to state all objectives in a format as precise as described above. Even though the determination of all the objectives for a common course cannot be left entirely to the discretion of each instructor within the framework of a common set of objectives, there is still sufficient leeway for the teacher to work toward certain goals unique to his or her class. Further in realizing the unified aims, she or he can follow many paths. Common objectives do not have to imply common methods and thus need not stifle the creativity of the individual teacher. Admittedly some capable and conscientious educators may not value the idea of an identical core of objectives. They may instead place a premium on diversity and differences between their own and other' objectives. But to the extent that equivalence is seen as valuable, cooperative development of objectives is highly recommended. Find table in materials section.

2.2 *Key Concept: Strategies in Developing Educational Objectives*

There are three other strategies that may be employed in identifying and detailing course objectives: analysis of teacher tests, classroom observation, and use of the Taxonomies of Educational Objectives.

2.2.1 *Analysis of Teacher Tests*

The Group might well begin with an analysis of the tests used by various teachers to evaluate course outcomes. By analyzing test items in the light of the instruction experiences of the learners, one can draw inferences about the kinds of behaviours required of them in answering each question. It must be emphasized that the validity of such inferences depends on an accurate knowledge of the background the student brings to the item, because the same item may elicit entirely different behaviours from different people. For example, a test question may involve simple recall of memorized facts for students who have previously simply discussed the specific material in class, while it may require high-level analysis and application for those who have never seen the specific material but have conversed about the principles that relate to the solution of the problem during the instruction period.

2.2.2 *Classroom Observation for Unexpected Outcomes*

Another way to begin the formulation of objectives is by observing classes for the purpose of identifying student changes actually taking place. Actual student performance reveals the objectives of instruction. Often these are quite different from the objectives stated at the outset of the course.

In the strategy, the observer looks not only for expected terminal behaviours but also for unanticipated outcomes. The procedure is based on the assumption that while the text or course materials have content validity, it is difficult to envision all the resulting behaviours beforehand. Too often unexpected negative and positive outcomes of the course are overlooked because evaluation is concentrated exclusively on the previously formulated objectives. Course improvement can be obtained more readily when the picture of the outcomes is complete. Thus, while expected outcomes often can be realized, the teacher should always try to determine what is unexpectedly forfeited or gained by his or her decisions about objectives. Classroom Observation can give a teacher these needed insights.

2.2.3 The Taxonomy of Educational Objectives

The third strategy in developing objectives is the use of the Taxonomy of Educational Objectives edited by B.S Bloom.

The taxonomy deals with three domains of human potential: Cognitive, Affective and Psychomotor. Since university level education is mainly concerned with Cognitive and Affective domain, the following discussion refers to these categories only despite the principle are the same for classifying objectives in the three categories.

The following represents the cognitive domain of Bloom's taxonomy.

- Knowledge: of terminology, facts, etc; remembering or recalling appropriate information
- Comprehension: grasping or understanding the meaning of the information
- Application: Use of information already learned in new and specific situations to address problems or questions
- Analysis: Breaking down information into parts, categorizing, contrasting, differentiating, discriminating, etc
- Synthesis: Applying prior knowledge and skills to produce or develop a new product or a new whole
- Evaluation: Judging the value of the information or material based on what one values or believes

The Taxonomy is a result of the work of a group of college examiners who developed the classification system for educational objectives to facilitate communication among themselves and with colleagues about objectives, test items, and test procedures. They were aware that the lack of such a systematically operationalized procedure for classification was responsible for much of the ambiguity, misinterpretation, and conversation without communication which greeted educators, attempts to share ideas about objectives and testing. In the definition of educational objectives, as we have seen, both the behaviour and the content must be specified. The Taxonomy places the behavioural aspect of the objective within a hierarchical framework: each category is assumed to include behaviour more complex, abstract, or internalized than the previous category. These categories are arranged along a continuum from simple to complex in the cognitive Domain, in the affective Domain, the continuum is one of internalization; that is, the ordering describes the process

by which a given phenomenon or value progresses from a level of bare awareness to a position of some power to guide or control a person's actions.

Each of the hierarchical categories in cognitive and affective domains of the is illustrated by examples of educational objectives taken from the literature, a description of the behaviours involved at the particular level and sample test items designed to measure the described behaviours.

Teachers may use the Taxonomy in various ways. First, if a group of teachers have a set of objectives stated in broad terms, the Taxonomy can help specify them operationally. Thus, if one of the objectives is that "the students understands economics information present in graphic form," the teachers can translate this statement into more precise terms by choosing various behaviours specified in the categories of the Taxonomy or by using the Illustrative test items as operational statements. Either way, the Taxonomy provides teachers struggling over the problem of stating objectives with a common point of reference on which to centre their discussion.

Second, the test items in the Taxonomy can be used by teachers as models in building similar items peculiar to their content-area needs. The Taxonomy abounds in model items designed to measure all types of behaviour from simple to very complex. Teachers generally have little difficulty testing straightforward recall of facts but are not so adept at building items to measure higher order mental processes or affective outcomes of instruction. One of the main criticisms teachers level at objective tests is that they examine only very simple skills. The model items in the Taxonomy should disabuse them of this notion and give them direction in constructing items measuring more complex behaviour. In fact, one of the principal values of the cognitive Taxonomy has been that it has called teachers attention to the fact that it is possible to measure more complex objectives than recall of facts.

Third, the Taxonomy can suggest classes of objectives not previously considered. Used in this manner, it becomes a guide for a more comprehensive evaluation of course outcomes by proposing behaviours to be looked for that may not be anticipated at the outset of the course. This generates a more valid description of the results of a particular instruction sequence which in turn should lead to improved instruction in the further.

Fourth, the Taxonomy can be used to help teachers analyze standardized tests. Usually, teachers have the feeling that standardized tests are put together by experts who know more than they do, and though they may feel a vague discontent with the test, too often they do not analyze

the content of these tests against their objectives to determine how well they march. Here again, by using the taxonomy as a translating framework one can compare the test with the teachers' goals. In its simplest form this may be a determination of the proportion of items in each of the major taxonomy categories. This alone is often enough information to help a teacher determine a test's relevance. Finally, if a teacher is interested in building a valid achievement test himself, he should try to have his test items reflect the relative emphasis instruction has placed on the various taxonomic categories.

2.3 Key Concept: Table Specifications

There are several approaches to building useful instruction and evaluation models. One of these Models is basic in Tyler' approach to curriculum development: the construction of a table of specifications, which presents the course objectives in the form of a two-dimensional matrix. There are three steps involved in arriving at a table of specifications.

First, general objectives stated temporarily in rather broad terms must be decided upon by the teacher or curriculum builder. The next step is to break each of these objectives down into a **content** component and a **behaviour** component. The content area refers to the specific subject matter to be conveyed. The behaviour refers to what we want the student to do with the material. A later section of this section will describe in more detail procedures that can be used in specifying behaviours. The determination of content components is naturally a function of the subject-matter specialist.

Once the first two steps have been accomplished, a table of specification can be drawn up. This is a two-dimensional matrix or chart. Behaviours are listed along one dimension and the different content areas are specified along the second axis. The intersection of each behaviour (B) with each content area (C) results in a chart composed of $C \times B$, or n behaviour-content cell. The figure below contains a section of a master Table of specification for secondary level Biological Sciences.

Several cells in a matrix may well be empty, meaning that the specific behaviour for that particular content is not an objective of the course. There are various ways of assigning values to instructional objectives represented by target cells in a table of specifications. However, no matter how these values are assigned, the relative value afforded each cell in the matrix helps to assure that any test instrument built will have content validity. This may be accomplished by having the number

of test items written to measure each objective in the matrix approximate the value assigned to each cell. Find table in the materials section.

The way in which the table of specifications is used points up the distinction between formative and summative evaluation and between formative and summative objectives. Each target cell of the specifications matrix is a summative objective, and the students' attainment of the objectives is evaluated at the end of the course or sequence. Generally it is not possible to evaluate the student on the total matrix in one summative test, therefore, evaluation at the end of the course usually is directed at the sample of the cell with the view of making inferences about the students' performance on the whole table.

Formative evaluation, on the other hand, deals with only segment rather than the total specification matrix, but in a detailed and exhaustive fashion. Parts of the table have a separable existence in that they can be learned in relative isolation from other parts. Thus, it is conceivable that one cell may be treated independently as a learning unit, or it may be that a row or columns of cells naturally go together in the learning process.

Once a separable learning unit has been identified, it is necessary then to identify the components of the more broadly conceived objectives in that part of the matrix.

3. Teaching Approaches

- Discussion
- Group Work (Designing Table of Specification)

4. Learning Activities

4.1 Activity 1: Ice Breaking Activity

Invite participants to share their highest hopes for student outcomes in one of their courses. What do they want students to be able to do more than anything else? What student achievements would bring a smile of satisfaction?

4.2 Activity 2: Activating Prior Knowledge

Discuss prior knowledge with participants. Ask them:

- What do you know about writing objectives?

- What makes for a good learning outcome?
- What do you believe may be common misconceptions or errors in constructing learning outcomes?
- What is the relationship between learning outcomes and assessment?

4.3 *Activity 3: Mapping Conceptions*

Make a presentation to the group about learning outcomes using the content material and key concept 1 above. As the presentation is proceeding, draw a map of the concept of “Writing Learning Outcomes/Objectives”. See Wikipedia for a description of concept mapping http://en.wikipedia.org/wiki/Concept_map

You may also refer to this site for more information on Concept mapping: <http://www.graphic.org/concept.html>

4.4 *Activity 4: Application to the classroom*

Participants will work individually to take 1-3 of their current learning outcomes from their course syllabus (or their thoughts about desired outcomes if they have not yet written any). With the learning that has just occurred, participants will rewrite their objectives to be more active and in line with learning outcome criteria. After individual work, participants will form groups to discuss what they have written and to get feedback to make additional improvements.

4.5 *Activity 5: Group Work to Design Table of Specification*

Make a presentation to the group on how to design a Table of Specification using the material in Key Concept 2 above. Conducting this activity may help participants to identify outcomes that they may have otherwise overlooked. This is a thoughtful analysis of what is to be accomplished in the course

Following the presentation, participants will work individually on a table for one of their courses and then will share their drafts in small groups for further input and refinement.

Resources:

- Reading Material

5. Session Summary and Transition

The learning outcome for this session was to enable the MLs to help the participants to conceive of learning outcomes and design table of specification in accordance with the outcomes. To do so the participants were involved in various learning activities including group work. In the next session, we shall be dealing with the idea of 'Objective type of tests'.

6. Assessment

Toward the end of the session, the ML will evaluate the extent to which the trainees have achieved the session objectives, through observation of the Table of Specification task.

Session VI: Objective Type Test

1. Session Learning Outcomes

The learning outcome for this session is to enable the participants to:

- Construct various kinds of objective tests in accordance with the standards suggested by the experts.

2. Key Concepts and Content

The associated interactive lecture comprised the following topics:

- Objective type tests
- Types of objective-type tests
- Scoring the objective tests

In the course of interactive lecture the trainees shared their experiences and views with the module leader and the entire group.

2.1 *Key Concept: Objective Type Test*

Objective testing is a form of assessment where each question has one (and only one) correct answer. And there is no ambiguity about what that correct answer should be. An efficient and convenient way to measure the student's ability to recall the information identified by a table of specification is to build and administer a series of pertinent objective test items. An objective test item is one that can be scored in such a way that judgment is for all practical purposes eliminated when determining the correctness of a student answer.

Objective tests may be usefully designed as the supply type of item or the selection type of item. When responding to a supply type of item, the student has to provide the words, number, or symbols. The term "objective" here means there is complete objectivity in marking the test. The construction, specification and writing of the individual questions (items) are influenced by the judgment of examiners as much as in any other test. The objective test is largely used to test factual material and the understanding of concepts. Because of the objectivity and ease of marking, it is frequently used for testing large groups. It is claimed that skilled items writers can develop items to

test higher level intellectual skills (Cannon and Newbe) but if the perception of students is that these types of questions usually test the recall of facts, then they will prepare for them accordingly.

There are two types of objective test items

2.1.1 Supply Type

When responding to the supply type, the student has to provide the words, numbers, or symbols necessary. Illustrations of the supply type are the short answer question and the completion test items.

2.1.2 Selection Type

Allows the students to choose the correct responses from the information it provides.' True-false, multiple-choice, matching test items and countless variations of these all illustrate the selection type.

2.2 Key Concept: Various Types of Objective Type Tests

1. Short Answer
2. Completion test items
3. True-False items
4. Multiple-choice items
5. Matching Columns

2.2.1 Short-answer question

A large proportion of assessment items make use of short answer questions of some form (in assignments, quizzes, examination, laboratory tests). These questions vary in expected student response from one word or several lines to over a page, and include forms such as complete the sentence, supply the missing word or phrase, essay tests, diagrams with explanation, etc.

Those teachers who use supply items (short-answer question) in achievement tests do so because the likelihood of a student guessing the correct answer is minimized and because of their ease of construction over the selection type. However, they also find that student response to supply test items are more difficult to score, and that often the items measure only the student's knowledge of factual details. An example is given below.

Directions: within the space provided, write the word or phrases that correctly answers the question.

What is the name of the author of the novel entitled Pickwick Papers?

(Charles Dickens)

2.2.2 Completion Test Item

The supply test item (completion test item) can be crudely defined similar to an essay test item demanding a highly abbreviated answer. This answer is often only a single word or number, seldom more than several words or numbers. The student responds to a direct question or incomplete declarative statement by writing the answer in the space provided. Notice that there is little difference between short-answer question and completion test item. By means of a simple arrangement of words, a short-answer question becomes a completion test item. Or a completion test item becomes a short-answer question. They are sometimes haphazardly intermixed in classroom achievement tests; a better practice is to separate them, especially when young students are being tested.

Directions: within the space provided, write the word or phrase that correctly

The name of the author of the novel entitled Pickwick Papers is

(Charles Dickens).

This is a completion item. Stated as short answer question it would be:

Who is the author of the novel the Pickwick Papers?

2.2.3 True-false test item

The true-false item in its simplest form is a declarative statement that the student must judge as true or false. A test of this type can widely sample a large amount of subject matter without requiring much time. On the other hand, the true-false test item often involves only trivial pieces of information, and because one of two responses, must be correct, students who don't know the right one frequency guess.

The true false test item is nothing more than a declarative statement to which the student responds in one of two ways-the statement is true or it is false. Occasionally , the statement is so worded that it is more convenient to ask the student to respond with **"Right"** or **"Wrong"** rather than **"True"** or **"false"**. Moreover, changing the declarative statement to a question need not necessarily increase the number of possible responses. In these instances, the question can be phrased so that a **"Yes"** or **"No"** response is requested.

Direction: Determine whether each of the following statements is true or false. If the statement is true, circle the **"T"** following the statement; if the statement is false, circle the **"F"**.

The novel Entitled Pickwick Papers was written by Charles Dickens.

F T

The most common type of true-false test item has already been illustrated. Less common variations are the following.

2.2.4 Correction Variety

Direction: Determine whether each of the following statement is true or false .if the Statement is true, circle the **"T"** following the statement, if it is false, circle the **"F"** and write in the blank provided the word or words that, when Substituted for the word underlined, will make the statement true.

1. The earth is essentially spherical in shape. F T
2. The sun is a planet. F T (star)
3. The earth spins on its axis once each month. F T (day)

2.2.5 Cluster Variety

Direction: The following statements pertain to the location of various European countries. Determine whether each statement about each country is true or false. If it is true, circle the "T" following the statement .if it is false, circle the "F".

Switzerland has a common border with

- | | | |
|--------------------------------|---|---|
| 1. Italy on the south | T | F |
| 2. France on the west | T | F |
| 3. Austria on the east | T | F |
| 4. Czechoslovakia on the north | T | F |

2.2.6 T-F-CT-CF Variety

Direction: Determine (1) whether each of the following statements is true or false and (2) whether the converse of the statement is true or false. If it true, circle the "T" preceding the statement, if it is false, circle the "F". If the converse of the statement is true, circle "CT"; if the converse is false, circle "CF". Two correct answers must be given for each statement.

1. An equilateral triangle is also equiangular triangle T F CT CF

(converse would be: An equiangular triangle is also an equilateral triangle)

2. A right triangle is necessary an isosceles triangle T F CT CF

(converse would be: And isosceles triangle is a right triangle)

2.2.7 T.F-TF Variety

Directions: Determine whether each of the following statements is true, false, or true under some circumstances and false under other circumstances if the statement is true under all circumstances, circle the 'T' following the statement; if it is false under all circumstances, circle the 'F' if it is true under some circumstances and false under others; circle the "TF".

1. If a person is living at an altitude of 40^0 he is living north of the equator.

T F TF

2. The prime meridian is an imaginary line at 0^0 longitudes.

T F TF

2.2.8 Multiple-Choice Item

A common type of test item is a [multiple-choice](#) question; the author of the test provides several possible answers (usually four or five) from which the test subjects must choose. There is one right answer, usually represented by only one answer option, though sometimes divided into two or more, all of which subjects must identify correctly. Such a question may look like this:

Directions: For each of the following questions choose the correct answer from among the four possible answers listed. Write the number of your choice in the blank to the left of the question.

1. Who wrote the novel entitled Pickwick Papers?

1. William Thackeray
2. Charles Dickens
3. Anthony Trollope
4. George Eliot

Multiple-choice questions are probably the most widely used of objective test. Such questions are normally composed of four parts:

1. Stem- question or incomplete statement
2. Options-suggested answers or completions
3. Distracters- incorrect responses
4. Key- correct responses

While the **stem** is, in most cases, written material, other material such as graphs, diagrams, sets of results may be used. In these cases it is probable that abilities other than recall may be tested. In some cases a number of questions (items) may be related to the same material. In these

circumstances, care must be taken to make the questions independent (i.e. the answer to one question not depending on an answer to a previous one).

In some cases, MCQs may be used to test higher abilities by asking students to judge the most appropriate answers to problem from several "correct" ones. Obviously, great care is required for the setting of such a question. It is usual to have four or five options, with five options giving the most reliable test. However, it may be difficult to provide five plausible options and in this case it is better to stay with four.

Some multiple-choice test item requires a correct answer, others a "**best**" answer. This difference can be traced to ' the subject matter. For instance, when selecting the name of author of a book among four names listed the student searches for the correct answer; all distracters are completely wrong. However, when selecting the principal reason from among four possible reasons that Ulysses S. Grant was elected to the presidency of United States, the student searches for the "**best**" answer. It should clearly be the most outstanding of those listed. As you can easily see, in this illustration the distracters can be actual reasons, but relatively unimportant. Both of these kinds of multiple-choice test items are commonly used.

Introducing a multiple-choice test item by means of an incomplete statement seems to be equally as satisfactory as introducing it by means of a direct question. Often the factor governing the choice of stem is the length of the test item. If the direct question approach yields a short, easily understood test item, it is customarily used; should it not do so, the incomplete statement approach replaces it. For a person inexperienced in building multiple-choice test items, however, the direct question is recommended, since fewer technically weak items results.

There are numerous variations of multiple-choice test item. The most familiar form is that illustrated earlier. Four additional variations are shows below.

2.2.9 Multiple-Response Variety

Directions: for each of the following questions, select the correct answer or answer from among the four listed. Note that for each question there may be as few as one and as many as four correct answer; write the number(s) of your choice (s) in the blank to the left of the question.

1. Which of the following compounds are gases when at room temperature and under normal pressure?

1. Benzene
2. Ammonia
3. Carbon dioxide
4. Silicon dioxide

2.2.10 Combined-Response Variety

Directions: Each of the following exercises contains a group of objects, people, or event, the members of which are to be arranged in proper order according to the principle stated. Select the correct order for those listed and write the number of your choice in the blank to left of the exercise.

1. Arrange the following British statesmen in terms of the dates of their careers,

1. Muhammad Ali Bogra
2. Sir Khawaja Nazmuddin
3. Liaquat Ali
4. Chaudhry Muhammad Ali

- i. d, b, c, a
- ii. b, d, a, c
- iii. b, a, d, c
- iv. d, c, b, a

2.2.11 Degree-Of-Certainty Variety

Direction: For each of the following questions select the correct response from among the four listed. Write the number of your choice in the blank to the left of the exercise. Then indicate your degree of certainty for your choice by selecting the most descriptive of the three statements shown, and writing its number in the blank provided.

1. Which of the following city is located near to the Ravi River?

- 1) Islamabad
- 2) Quetta
- 3) Lahore
- 4) Karachi

How certain are you of your choice?

- 1. very certain
- 2. Fairly certain
- 3. Quite uncertain

2.2.12 Matching Test Item

The matching test item in its simplest form consist of two lists of items and a set of instructions for matching each of the item in the first with one in the, second. The first is known as a list of premises; the second as a list of responses. The instructions explain how the students are to match each premise with one or more of the responses. Premises and responses may be statements, names of people or places, titles of work of art, dates, formula, symbols, or even parts of a picture or drawing .they may vary greatly but will tend to be homogeneous within a given list. Usually the length of each premise or response is (and should be) relatively short, perhaps no longer than a word or two.

In some matching exercises, the number of premises and responses is the same and each response can be used only once; this is a **“Perfect matching”** exercise. In other instances some of the responses do not match any of the premises; this is an **“imperfect matching”** exercise. An: imperfect **matching”** exercise can be constructed by marking the list of responses longer than the list of premises or, if the lists are of equal length, by including some responses that must be used more than once. In addition to the types of matching test items mentioned in the foregoing paragraph, there are a number of other variations. Two promising ones are illustrated here.

2.2.13 Compound Matching Variety

Directions: Match the title of each novel with its author by writing the letter identifying the author in the blank to the left of the title. It is possible that some authors have written more than one of the novels listed.

	Novels	Authors
(F)	1. Blanche Towers	A. Jane Austen
(B)	2. David Copperfield	B. Charles Dickens
(B)	3. Great Expectations	C. Alexander Dumas
(B)	4. Oliver Twist	D. George Eliot
(B)	5. Pick Wick Papers	E. William Thackeray
(A)	6. Pride and Prejudice	F. Anthony Trollope
(D)	7. Romola	
(B)	8. Tale of Two Cities	
(E)	9. Vanity' Fair	
(F)	10. The Warden	

2.2.14 Classification Variety

Direction: Each of the following statements is a complete sentence. Determine whether the sentence is a simple, complex, compound, or compound complex sentence. Using the list below, find the letter corresponding to your choice and write it in the blanks to the left of the sentence.

- a. Simple sentence.
- b. Complex sentence.
- c. Compound sentence.
- d. Compound-complex sentence.

(C) 1. During the winter the days are short and the nights are long.

(A) 2. Jane rode to school on her bicycle.

(B) 3. If Mary Lou had been home she could have visited with her grandparents and their friends.

2.2.15 Construction of Objective Type Tests

- Test for important facts and knowledge.
- Tailor the questions to fit the examiners age, ability/mental level and purpose of the test.
- Avoid statements verbatim from the list.
- Write the items as clearly as possible.
- Avoid using interrelated item.
- There should be only one correct test answer.
- Don't give the answer away.
- Get an independent review of your test.
- Avoid giving irrelevant clues.
- To test for knowledge of definition/technical terms, use a direct question in which term is given and definition is asked.
- Have the blank occur near the end of the sentences in case of completion test items.
- Avoid excessive blanks in a single statement.
- Omit important word only.
- Avoid removing statement verbatim from textbook or other sources and try to use them as short-answer test items.

2.3 *Key Concept: Scoring the Objective Test*

To many classroom teachers, the least exciting task of achievement testing is the scoring of the student responses. To handle this task the students are sometimes asked to score either their own or their neighbours' papers. Considering the importance of accurate scoring, the limitations of this procedure are obvious. When scoring the papers the teacher commonly takes a blank copy of the test, fills in the correct responses; and compares this key with the responses on the test copy returned by each student. The number of correct responses by each student is determined and

recorded. The total operation may not require much time, but being essentially clerical in nature, it is often viewed with distaste by those who must do it.

Various attempts have been made to reduce the time required for scoring objective tests. These have taken the form of scoring keys designed to assist in hand, scoring individual test copies or separate answer sheets, and machine scoring procedures using answer sheets.

2.3.1 Scoring keys for hand-scoring

Two of the more successful scoring keys for hand scoring are the **fan key** and the **cut-out key**.

The fan key is a sheet of paper on which the, correct responses are written in a series of columns. The sheets of paper is the same as size as the test copy or the separate answer sheet. Each column corresponds to a page of the test or a column on the answer sheet, and the correct responses are spaced in the column as the student responses are spaced on the page of the test or the column on the appropriate answer sheet. The key is folded along vertical lines separating its columns, thus making the appearance of a fan. It is superimposed on the appropriate page of the test copy and placed next to the appropriate column and the answer sheet and matched with the corresponding responses.

The cut-key is also a sheet of paper of the same size as the test copy or answer sheet. However, windows are cut in appropriate position to reveal the correct responses if they are made. The key is superimposed on a page of the test copy or the separate answer sheet and the student's responses are scored.

2.3.2 Machine-scoring

If the commercial answer sheets are used in conjunction with informal objective tests, teachers can, if they wish, turn over the task of scoring to a scoring machine. Under ideal conditions, the speed and accuracy of scoring can be superior; furthermore, computers can be programmed to print suggestions for remedial work for students whose patterns of error are typical of identifiable learning difficulties.

The **disadvantages** of machine-scoring of this type are well –known. First of all, it cannot be used with supply test items under any circumstances. Secondly, the students must be trained in the procedure of marking the answer sheets. The marks in the spaces must be reasonably heavy.

Erasures must be completed and stray pencil marks avoided, because they might be recorded by the machine as wrong answers. A third disadvantage is the availability of scoring and computing equipment. Unless a machine is available on relatively short notice, scoring may prove to be more trouble than it is worth as far as classroom achievement tests are concerned. Finally, there typically is no indication on the answer sheet as to whether an answer to a given test item is correct or incorrect. The students cannot identify their strong and weak areas by examining the answer sheet alone.

2.3.3 Correcting for Guessing

The persistent problem encountered with objective achievement tests is the tendency of students to guess when they do not know the correct answer. Sometimes this guess is based on partial knowledge, other times on misinformation, and still other times on no information at all. In the last instance, they may not even have read the test item or, if they did, its answer is total mystery.

If the score is determined by the number of correct responses, any success the students had when they guessed will raise the score. Obviously, this is not a defensible situation. The test score should reflect achievement only, rather than achievement plus the students' willingness to guess and the amount of success they happened to have in this case. Therefore, some teachers argue that students must be discouraged from wild guessing and be penalized if they do.

The correction for guessing formula for true-false and multiple-choice test items in norm-referenced tests is as follows:

$$S = R - (W / n - 1)$$

Where

S= the test score

R= the number of correct responses

W= the number of incorrect responses

N= the number of suggested responses from which one is chosen

R is often called the number of **"rights"**, whereas "W" is thought of as the number of **"Wrongs"**

For a true-false test, n is two and formula reduces to

$$S = R - W$$

For multiple-choice test having four suggested responses, the formula becomes

$$S = \frac{1}{3} R - W$$

Notice that to use the formula in any of these cases, the number of omitted test items is ignored.

These formulas assume that all incorrect responses and a chance proportion of the correct ones are the result of wild guessing. This is, of course, not fully justified. The students are often taking **"calculated risks"** when selecting their responses. Rather than making wild guesses they are making more or less intelligent guesses based on sound but incomplete knowledge.

Because the foregoing assumption is not completely satisfied, the formula will overcorrect in some instances and under correct in others. Consequently, they are persistently criticized by teachers and students alike.

There is another disadvantage when a correction for guessing formula is applied informing the student that such a correction will be made customarily acts as deterrent , but its effectiveness varies with the student. Some are willing to guess wildly no matter what correction formulas are used. Others are cautions. A correction for guessing will cause them to answer only when they are certain of the correct response, and even intelligent guesses are not ventured. More often than not, the first type of student gains higher test scores than the second. Thus, an extraneous personality factor unduly influences achievement tests designed to measure verbal or mathematical ability.

Determining the test score by counting the number of correct responses is perfectly acceptable. Despite the fact that the test scores are different in size when corrected than when not corrected for, guessing, the relative position of each student in the class is the same in both cases. The relationship between the uncorrected and corrected test scores under these conditions is perfect. If the purpose of an achievement test is to determine the relative position of each student in the class, the simplest test score may as well be used.

To ensure that all students will answer all test items, they must be instructed to guess when they do not know the answer, even if they must guess wildly. Needless to say, these instructions can hardly be considered good pedagogy. The student may lose respect for objective achievement testing, possibly even for the subject matter or the teacher. The full impact of these instructions is difficult to measure. Admittedly unsavoury, they probably have no lasting effect upon most students.

3. Teaching Approaches

- Lecture
- Discussion
- Group Work
- Application Exercise

Note: The implementers of the module are encouraged to adjust this presentation in accordance with the participants' background and the nature of available resources.

4. Learning Activities

4.1 Ice-breaking Activity

As an ice breaker—ask participants to talk about ways that life tests us.

4.2 Activating Prior Knowledge

To activate prior knowledge the participants will be asked:

- Describe the meaning of the term 'Objective' and how these meanings relate to an objective type test?
- Name various types of objective test.

4.3 Pair and Share Activity

The participants may be asked to group themselves in pairs and share with their partners' answers to the following:

- Compare advantages and disadvantages of various types of objective-test items described in the reading material.
- Being a teacher which of objective type test would you use in your class?

The ML shall assist the participants to evaluate their answers.

4.4 Interactive Lecture

The ML shall deliver interactive lecture on the “objective type test”. In the course of lecture, the participants may be allowed to express their ideas or enter into arguments/debate that may help them to clarify their concepts. The lecture shall comprise the following topics.

1. Objective-Type Test
2. Types of objective-type test
 - a. Supply Type
 - b. Selection Type
 - c. Short-Answer Item
 - d. Completion Test Item
 - e. True/False Item
 - f. Matching Item
 - g. Multiple-Choice item
3. Construction of Objective-type tests
4. Scoring the Objective-Test
 - a. Scoring keys for hand scoring
 - b. Machine scoring
 - c. Correcting for Guessing

The ideas incorporated in the attached reading materials may help the ML to prepare his lecture. He is encouraged to use additional materials for this purpose, if there is need to do so.

4.5 Total Group Activity

Instructions

5. Participants to divided into four groups
6. Select group leaders
7. Responsibilities of group leaders include:
 - a. Record ideas

- b. Help group members to arrive at a consensus
- c. Present the group consensus by the leader

Problems for the groups are:

Problem1: Develop ten supply type objective test items.

Problem 2: Develop ten selection type objective test items.

Problem3: Develop ten short answer type objective test items.

Problem 4: Develop ten true and false objective test items.

To share the ideas of their groups with the total group, the team leader of each group will be invited to conduct the session in an interactive way.

The ML will act as a facilitator during this activity.

Application Activity

Participants will review their Syllabus Working Draft and will identify what type of assessments they will use and will write about those in the syllabus so that students know what to expect.

Resources

- Reading Material
- Multimedia
- Posters/charts

5. Session Summary and Transition

The learning outcomes for this session were to enable the participants to construct various kinds of objective tests in accordance with the standards suggested by the experts. To do so the participants were involved in various learning activities including an interactive lecture. In the next session, we shall be dealing with the idea of 'Subjective type tests'.

6. Assessment

Toward the end of the session, the ML will evaluate through questions the extent to which the trainees have achieved the session objectives. The ML will determine if true objective tests were developed in that activity.

Session VII: Subjective Type Tests

1. Session Learning Outcomes

The learning outcome for this session is to enable the participants to construct essay type tests in accordance with the standards suggested by the experts

2. Key Concepts and Content

The associated interactive lecture comprised the following topics:

- Introduction to Subjective Tests–Type Tests
- Characteristics of Subjective Tests–Type Tests
- Construction of Subjective Tests–Type Tests
- Methods of Scoring

2.1 *Key Concept: Introduction to Subjective Type Test*

Typically subjective (essay) tests are composed of several multipart questions, a selection of which must be attempted by the test candidate. These tests usually require you to do a fair amount of writing. A subjective test is evaluated by giving an opinion. It can be compared with an objective test, which has right or wrong answers and so can be marked objectively. Subjective tests are more challenging and expensive to prepare, administer and evaluate correctly, but they can be more valid.

Example: Tests of writing ability are often subjective because they require an examiner to give an opinion on the level of the writing. “Learners preparing for a subjective writing test, for example a letter of complaint, need to think about their target audience, since they are being asked to produce a whole text. Teachers can help them by emphasizing the importance of analyzing the question and identifying the key points of content, register, and format.

2.2 *Key Concept 2: Characteristics of Subjective Type Tests*

2.2.1 Essay Test Items

An essay test item is one for which the student supplies, rather than selects, the correct answer. More specifically, an essay item demands a response composed by the student, usually in one or more sentences, of a nature that no single response or pattern of responses can be listed as correct, and the accuracy and quality of the answers can be judged subjectively only by a person

skilled and informed in the subject, customarily the classroom teacher. The important features of this description are the freedom of response allowed to the student and the difficulty of scoring the responses. The first is used as a basis for classifying essay items; the second indicates the most perplexing problem associated with essay items, a problem treated in detail later in this chapter.

2.2.2 Freedom of Response

The freedom of response allowed to the student may vary appreciably from one essay test item to another. Consider the following items, both of which are designed for use in a college.

1. In your opinion, is the Presidential form of Government more suitable for Pakistan as compared to the Parliamentary form of Government? Give reasons for your answer.
2. Describe the history of the papacy from its origins to the present, concentrating on its social, political, and religious impact on Europe.

Both of these test items demand extended responses from the students. In fact, the typical reaction to each would be "...but I could write a book about it". This is justified in both instances; both items are tapping a higher order of learning than some objective test items; only those students who can recall what they have learned, and then organize it into a suitable answer will succeed.

In contrast, examine the following items:

1. Tariq and Ayesha are students. They try to take good care of their teeth. Both brush them immediately after their morning and evening meals, but do not brush them after their noon meal or after eating between meals. Both have the dentist inspect their teeth every six months. However, Tariq's teeth decay more easily than Ayesha's. Give possible reasons why this is true.
2. An athlete wishes to know the amount of time she needs to run 100 yards. She stations one person at the starting line with a revolver and a second at the finish line with a stop watch. In order to time the athlete accurately, should the person at the finish line start the watch at the 'moment he sees the flash of the revolver or the moment he hears the sound of the shot? Why?

In terms of freedom of response, these two essay items represent the opposite extremes. The correct responses are now quite specific; notice also that, if the two situations described are novel, more than recall of information is required of the student.

The variations in freedom of response allowed the student offer a crude but useful means of classifying: the **extended-response** types, as illustrated by the first of the pair of test items, and the **restricted-response** type, as illustrated by the second of the pair.

2.2.3 Extended Response

The extended response has much to be said in its favour. It can be extremely challenging to students. To respond correctly, students must display such traits as their ability to organize, evaluate, write clearly, and be creative. Thus, the responses to these test items show how well the students have achieved important educational goals, possibly at the synthesis or evaluation levels of the cognitive taxonomy.

Extended-response essay questions are sometimes more suitably used as term paper topics or "take-home" tests rather than as "in-class" tests. Furthermore, they have value as teaching devices or as stimulus material when measuring writing ability instead of achievement in a subject matter area.

2.2.4 Restricted Response

The restricted-response essay item is of greater concern to use in the measurement of student achievement except as a measure of writing ability. This type of essay item differs from the first in that the perimeter of student response is better defined. A specific problem is presented. It requires the students to recall the proper information, organize it in a suitable manner, arrive at a defensible conclusion, and express it in their own words. In several important respects, it requires students to reveal abilities much like those required by a satisfactory answer to an extended-response essay test item.

However; this display must occur within well-defined restrictions. These restrictions simplify the scoring problem, thereby greatly improving the reliability of the scoring.

Observe that the restricted-response essay item is far removed from the supply type of test item described the last session. In the first place, it differs in the amount of freedom of response

allowed. Although the restricted-response essay sets limits in this respect, it does not confine the response to a word or two; on the contrary, a paragraph or more is usually needed if the question is to be answered properly. Secondly, it differs in terms of the behavioural changes reflected. The short-answer test is almost invariably used as a means of measuring student knowledge; the restricted-response essay item can be used for this purpose or designed to measure more complex student achievement. The latter is a very important function of the essay item.

2.3 *Key Concept 3: Construction of Subjective Type Tests*

Following points should be kept in mind while constructing essay test items

- Give adequate time and thought to the preparation of essay questions.
- Questions should be written in such a way that it should elicit the behaviour you intend to evaluate/asses.
- Estimate a frame work.
- De-limit the area covered by the questions.
- Do not provide options.
- Adopt the length of the questions according to student age/ability.
- Use a relatively short answer.
- Prepare a scoring key/model answer.

2.4 *Key Concept 4: Methods of Scoring Essay Test Items*

A number of different methods of scoring the responses to essay test items have been developed; only two are discussed here. The first is called the analytical method; the second is known as the rating method.

2.4.1 *Analytical Method*

To use the analytical method of scoring, the teacher must first write out the correct responses to each test item. This is analyzed and its component parts identified. The total number of raw-score points allowed for the correct response is distributed among the various subparts. The points may be distributed equally or unequally among the parts, depending on the teacher's feelings about the matter. Finally, each student's responses to the test item are read, the various subparts of the correct response that it contains are noted, and the raw score determined accordingly. As far as the scoring is concerned, any extraneous material in the student's response is ignored, whether it is

accurately stated or not. Note that this procedure does not prevent the teacher from marking any inaccuracies in the statements containing unnecessary information.

A simple illustration of these procedures can be provided for the test item concerning possible reasons for the differences in incidence of tooth decay of students. The teacher may decide that the correct response should contain three elements thought to be of approximately equal importance. Therefore, each of the following is allotted one raw-score point.

1. Recognition that the nature of the boys' diets influences incidence of tooth decay.
2. Recognition that heredity factors can partly account for the incidence of tooth decay.
3. Recognition that all factors causing tooth decay are not known; hence differences between the two boys in terms of unknown factors could account partly for variations in the incidence of tooth decay.

With this analysis of the correct response firmly in mind, the teacher should be able to score student responses more quickly and consistently, moreover, later discussion of the test item, which would include a review of the students' responses and the scoring of items, is greatly facilitated when based on such an analysis. Both teacher and student are much more certain that the scoring is fair, and, in addition, they have isolated any gaps in each student's achievement revealed by the test item. The analytical method offers several excellent advantages. In the first place, the analysis of the correct response will quite frequently cause teachers to redesign the statement of the test item. They may realize that the item as originally scored will not necessarily elicit the desired response, even when the student is very well informed. Any reframing of the test item and readjustment of the time that result from analyzing the correct response are 'generally distinct improvements. Secondly, the analytical method used by a conscientious grader can yield very reliable scores; this is true when the essay test item is the restricted rather than the extended-response type.

Attempts have been made to train students to score essay items using the analytical method. The results are so encouraging that it seems reasonable for exploring further the possibility of teaching this scoring technique to students, thereby realizing pedagogical gains as well as conserving teacher time.

2.4.2 Rating Method

The rating method (sometimes called the global or holistic method) also requires that a correct response be written, by the teacher for each test item; however, the response is not

subdivided, the wholeness of the response is emphasized; the scorer attempts to grasp its complete scope. With this in mind, the student's responses are read. On the basis of the wholeness of each response, the scorer usually classifies it in one of three or one of five categories. The categories represent levels of quality such as, in the first case, good, average, poor, and in the second case, very good, Good, Average, Poor, or very poor. Although the use of five categories is common in classroom testing, as many as nine can be used with good success.

Once the scorer has read and classified all responses, they are read a second time, possibly a third. The answers in each category are compared with each other. Those that don't fit are shifted to a more suitable category. Homogeneity in each category is desirable, even though the scorer realizes that it depends on the number of categories used. The fewer categories used, the more variability exists within each.

When the scorer is completely satisfied that each response is in its proper category, it is marked accordingly. Total, partial, or no credit is allowed, depending on the category checked. The entire process is then repeated for all other essay items in the test.

The rating method of scoring essay item is a distinct improvement over the single hasty reading in the absence of a clearly understood correct answer. On the other hand, it has not yielded the high scorer reliabilities of analytical method. A scorer often hit difficulty differentiating between the various categories and may even find that the basis for differentiating is changing at times.

The reliability of this method of scoring responses to essay test item can be improved by serious efforts to develop scoring categories representing various levels of quality. Prior to reading all of the answers, teacher analyzes a sample of responses to determine mutually exclusive categories (not to exceed nine) based on qualitative differences. After descriptions of categories are prepared (perhaps with sample responses for each) the teacher can judge the merit of each item response and assign it a numerical value. Then each student answer is read, classified in the appropriate category, and assigned the value associated with it.

3. Teaching Approaches

- Lecture
- Discussion
- Group Work

4. Learning Activities

4.1 Subjective-Type Test

Note: The implementers of the module are encouraged to adjust this presentation in accordance with the participants' background and the nature of available resources.

4.2 Learning Outcomes

The participants will be able to:

- Construct Essay-type test in accordance with the standards suggested by the experts.

4.3 Ice-breaking Activity

(Elicit responses)

Is reality an 'objective' or 'subjective' phenomenon?

4.4 Activating prior knowledge

To activate prior knowledge the participants will be asked:

- Describe the meaning of the Subjective-type test.
- State why do we need such tests?
- Select your Preferred test type (objective or subject) and justify your preference

The responses of the participants may be discussed in the total group.

4.5 Mapping Participants Conceptions

The participants may be asked to identify the strengths and weakness of subjective type tests. Their response may be displayed through flip charts or multimedia, to find out agreements and disagreements.

4.6 Interactive Lecture

The ML shall deliver interactive lecture on the “subjective type test”. In the course of lecture, the participants may be allowed to express their ideas or enter into arguments/debate that may help them to clarify their concepts. The lecture shall comprise the following topics.

1. Subjective-Type Test (introduction)
2. Characteristics
 - a. Freedom of Responses
 - b. Extended Responses
 - c. Restricted Responses
3. Construction
4. Method of scoring
 - a. Analytical Method
 - b. Rating Method

The ideas incorporated in the attached reading materials may help the ML to prepare his lecture. He is encouraged to use additional materials for this purpose, if there is need to do so.

4.7 Total Group Activity

Each of The participants will be asked to:

- Develop two subjective type questions related to their areas of study. And, theses questions will be evaluated by the participants under the leadership of ML.

Application Activity

The participants will once again look at their Working Draft Syllabus to determine if they want to add any subjective tests to the syllabus.

Resources:

- Reading Material
- Multimedia

- Posters/charts

5. Session Summary and Transition

The learning outcomes for this session were to enable the trainers to construct various kinds of subjective tests in accordance with the standards suggested by the experts. To do so participants were involved in various learning activities including an interactive lecture, group and application activities. In the next session, we shall be dealing with the idea of 'Grading System'.

6. Assessment

Toward the end of the session, the ML will evaluate through questions the extent to which the trainees have achieved the session objectives.

Session VIII: Grading System

1. Session Learning Outcomes

The learning outcomes for this session are to enable the participants to:

- Appropriately represent the ability level of the students in numbers and letters.

2. Key Concepts and Content

The associated interactive lecture comprised the following topics:

- Grading System
- Types of Grading Systems
- Academic Grading in Pakistan

2.1 ***Key Concept: Grading System***

In education, a grade (or mark) is a teacher's standardized evaluation of a student's work. In some countries, evaluations can be expressed quantifiably, and calculated into a numeric grade point average (GPA), which is used as a metric by employers and others to assess and compare students. A *cumulative grade point average* (CGPA) is the mean GPA from all terms, whereas GPA may only refer to a single term.

2.2 ***Key Concept: Types of Grading /Marking System***

2.2.1 **Percentage-Based Grading**

In subjects, grades are normally computed according to percentages such as class attendance, homework completion, and test averages. A weighted average of these variables is used to compute one percentage, which is the index from which grades are determined.

In subjective disciplines where essay exams and papers are more common, grades are sometimes represented numerically, other times with letter grades.

2.2.2 **Standards Based Grading**

With the evolution of Standards based education in Pakistan, examinations can test how well students have met a standards determined to be what every student should know and be able to do.

Students are graded as exceeding, meeting, or falling below the standard. The advantage is that students are not compared against each other, and all have the opportunity to pass the standard.

2.2.3 Rank Based Grading

Informally, grading on the curve refers to any system wherein the group performance is used to moderate evaluation — grading need not be strictly or purely rank-based. In the most extreme form, students are ranked and grades are assigned according to a student's rank, placing students in direct competition with one another.

2.2.4 Grade Point Average

Grade point average (GPA) is a number that represents the average of a student's grades during their time at an institution. Usually it is weighted by number of credits given for the enrolled course.

2.3 *Key Concept 3: Academic Grading in Pakistan*

In Pakistan two grading scales are commonly used in higher education:

Grade	Percentage	WES Equivalency
Distinction	80 - 100	A+
High Pass	70 - 80	A
Pass	60 - 69	B
Marginal Pass	50 - 59	C
Fail	0 - 49	F

Grade	Description	WES Equivalency
A	Excellent	A
B	Good	B
C	Satisfactory	C+
D	Pass	C
F	Fail	F

Another grading scale is commonly used in lower education

Percentage Of Marks	Grade	Description
80% and above	A-1	Exceptional
70% and above but below 80%	A	Excellent
60% and above but below 70%	B	Very Good
50% and above but below 60%	C	Good
40% and above but below 50%	D	Fair
below 40% to minimum pass marks	E	Satisfactory
below 33% or passing marks	F	Fail

Iqra University Quetta.

Percentage Of Marks	Grade	Points
88 – 100	A	4.00
81 – 87	B+	3.5
74 – 80	B	3.0
67 – 73	C+	2.5
60 – 66	C	2.0
Below 60	F	0
Incomplete	W	No points

Sardar Bahadur Khan Women University Quetta.

The student would be rated on the following passing grades.

D Grade	C Grade	B Grade	A Grade	A+ Grade
50=2.00	60=2.50	71=3.00	80=3.50	90 To 100=4.00
51=2.50	61=2.55	72=3.05	81=3.55	
52=2.10	62=2.60	73=3.10	82=3.60	
53=2.15	63=2.65	74=3.15	83=3.65	
54=2.20	64=2.70	75=3.20	84=3.70	
55=2.25	65=2.75	76=3.25	85=3.75	
56=2.30	66=2.80	77=3.30	86=3.80	
57=2.35	67=2.85	77=3.35	87=3.85	

58=2.40	68=2.90	78=3.40	88=3.90	
59=2.45	69=2.95	79=3.45	89=3.95	

The fraction in marks higher than or equal to 0.50 shall be rounded up to one.

Balochistan University of information Technology Engineering & Management Sciences

Mark Range	Grade Point	Grade
85 and above	4.00	A
80-84	3.70	A-
75-79	3.30	B+
70-74	3.00	B
65-69	2.70	B-
61-64	2.30	C+
58-60	2.00	C
55-57	1.70	C-
50-54	1.00	D
0-49*	0.00	F

*fraction is to be rounded as a whole

Equivalence in numerical grades, letter grades and grade points will be as follows:

Percent Marks	Letter Grade	Grade Points
85-100	A+	4.00
81-84	A	3.70
77-80	B+	3.30
73-76	B	3.00
69-72	B-	2.70
65-68	C+	2.30
60-64	C	2.00
55-59	C-	1.70
50-54	D	1.00
Below 50	F	0.00
Withdrawal	W	
Incomplete	I	

1. Maximum possible Grade Point Average is 4.00
2. Minimum Cumulative Grade Point Average for obtaining 2 year MS/M. Phil (course work and comprehensive) is 2.50. In order to qualify in the examination of semester a student must obtain at least GPA 2.50 and in individual subject not less than 2.30 in midterm / final examination / session work separately in written, as well as in practical.
3. If GPA/ CGPA of a student remains <2.50 (but >2.30) the student shall be given one chance (only once) to repeat two subjects (2-6 Credit Hours) in order to improve CGPA in MS/M.Phil. If GPA /CGPA of a student remain <2.50 he/ she shall be dropped from studies.

4. In MS/M. Phil leading to Ph.D. only those students who maintained CGPA ≥ 3.0 in MS/M. Phil shall be able to opt for Ph.D. and after qualifying comprehensive examination (GP ≥ 3.0) status of such students shall be changed to Ph.D. MS/M.Phil. Degree shall not be conferred on these students.
5. Minimum Cumulative Grade Point Average for PhD (course work and comprehensive) is 3.00.
6. A fraction of mark in a course is to be counted as '1' mark e.g. 64.1 or 64.9 is to be shown as 65.
7. In order to calculate the GPA, multiply Grade Point with the Credit Hours in each Course to obtain total grade points, add up to cumulative Grade Points and divide by the total number of Credit Hours to get the GPA for the Semester .
8. For calculating CGPA, sum total of GPs in a semester earned in different courses multiplied by respective credit hour of a course and divided by total numbers of credit hours.

$$\text{GPA} = \frac{\sum (\text{GP} \times \text{Credit Hours}) \text{ courses of a semester}}{\text{Total Credit Hours of a semester}}$$

$$\text{CGPA} = \frac{\sum (\text{GP} \times \text{Credit Hours}) \text{ of all courses in a programme}}{\text{Total Credit Hours of all courses in that Programme}}$$

Sir Syed University Of Engineering and Technology

Grades: Grades given to the student in each course shall be of two types:

2.2.1 Numerical Grades

Assessment of performance on the basis of marks (out of 100) fixed for a course of any Credit Hours Unit, shall be termed "Numerical Grade" (NG).

2.2.2 Alphabetical Grades

Equivalent of numerical grade in terms of alphabets shall be termed as Alphabetical Grade (AG). Each letter carries a value terms of numerical points or grade point (GP).

2.2.3 Grade Point Average

The Academic rating of a student shall be calculated on the basis of the Grade Point Average. The Grade points obtained by a student in each course shall be multiplied by the number of credit hours specified for that course and then the Grade Point Average (GPA) shall be calculated.

%	GRADING SYSTEM		
<40	G.P	Grade	Value Remarks
41-49	0.0	F	Fail
50-59	1.0-1.9	D	Pass
60-69	2.0-2.4	C	Satisfactory
70-79	2.5-2.9	C+	Average
80-85	3.0-3.3	B	Above Average
85-89	3.4-3.6	B+	Good
90-100	3.7-3.9	A-	Very Good
-	4.0	A	Excellent
	-	I	Incomplete

2.2.4 Cumulative Grade Point Average

1. The Cumulative Grade Point Average (CGPA) shall be calculated at the
2. If a student fails to secure a minimum CGPA of 2.00 at the end of the 8th Semester he/she will be given one additional chance to pass a course in which he/she has failed or absented, when it is offered for examination.
3. If a student is unable to pass a course or courses in the additional chance given, he/she will stand automatically removed from the rolls of the University.
4. A student will be given one additional chance to improve his/her CGPA by repeating a course or reappearing in the examination of a course he/she has obtained Grade C or lower, when the course is offered for examination.
5. If a student fails to make up the deficiency in his/her Cumulative Grade Point Average in the number of chances permitted, he/she will cease to be on the rolls of the University.

3. Teaching Approaches

- Lecture
- Discussion
- Group Work

4. Learning Activities

Grading System

Note: The implementers of the module are encouraged to adjust this presentation in accordance with the participants' background and the nature of available resources.

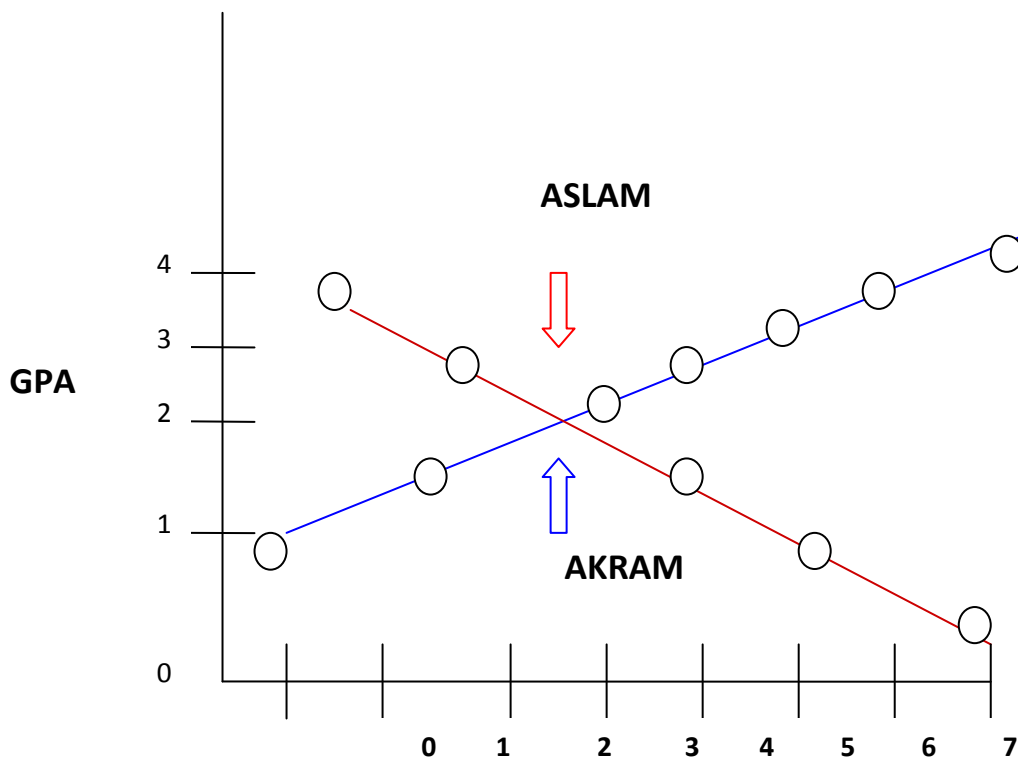
4.1 Learning Outcomes

The participants will be able to

1. Appropriately represent the ability level of their student in numbers and in letter.

4.2 Ice-breaking Activity

Graph will be flash



ASLAM'S GPA = 3.20

AKRAM'S GPA= 2.95

Question

1. Whose performance is better?

Questions

1. Suppose a student has acquired 91 marks in his or her mathematics exam, is he or she a good student of mathematics?
2. Suppose a student has acquired 11 marks in his or her mathematics exam, is he or she a bad student of mathematics?

Let the participants decide the answer for themselves.

4.3 Activating Prior Knowledge

To activate prior knowledge the participants will be asked:

- State the Merits and demerits of both letter and numerical grade.

Discussion may be carried out during this session.

4.4 Pair and Share Activity

The participants may be asked to group themselves in pairs and answer the following questions.

- What type of grading system(s) is used in your institutions?
- What are the major problems of the system that you face?

The responses of the pairs shall be presented for total group discussion.

4.5 Interactive Lecture

The ML shall deliver interactive lecture on the “grading system”. In the course of lecture, the participants may be allowed to express their ideas or enter into arguments/debate that may help them to clarify their concepts. The lecture shall comprise the following topics.

1. Grading System
2. Types of Grading Systems
 - a. Percentage-based grading
 - b. Standard-based grading
 - c. Rank-based grading
 - d. Grade point average

4.6 Academic Grading in Pakistan

1. Numerical Grades
2. Letter Grades

The ideas incorporated in the attached reading materials may help the ML to prepare his or her lecture. S/he is encouraged to use additional materials for this purpose, if there is need to do so.

4.7 Recapitulation of the Ideas of the Session VIII by the ML

4.8 Group Discussion Instructions

1. Participants to divided into two groups
2. Select group leaders
3. Responsibilities of group leaders include:
 - a. Record ideas
 - b. Help group members to arrive at a consensus
 - c. Present the group consensus by the leader
4. Questions for the groups are:

Group 1: Identify reasons underlying the variations among the institutions in giving letter and numerical grades to students, and state how this variation may be reduced.

Group 2: list good and bad points of converting numerical grades into letter grades and vice versa.

The team leader may be asked to present the ideas of their groups for total group discussion.

Resources

- Reading Material
- Multimedia
- Posters/charts

Application

- Have participants review their syllabi for statements of grading policy. Each syllabus should specific the policy used for grading in the course or makes reference to an institutional policy, if there is one that affects all courses.

5. Session Summary and Transition

The learning outcome for this session was to enable the participants to appropriately represent the ability level of the students in numbers and letters. To do so the trainees were involved in various learning activities including an interactive lecture.

6. Assessment

Toward the end of the session, the ML will evaluate through questions the extent to which the trainees have achieved the session objectives.

D. Materials

The ideas incorporated in the attached reading materials may help the ML to prepare his/her lecture. He/She is encouraged to use additional materials for this purpose, if there is need to do so.

D.1 Learning Materials of Session I: Focus on Powerful Ideas

From: Brophy, J., Alleman, J., & Knighton, B. (2009). Inside the social studies classroom (pp. 58-60). New York: Routledge.

The importance of structuring content around powerful ideas has been recognized at least since Dewey (1902, 1938), who viewed them as the basis for connecting subject matter to students' prior knowledge in ways that make their learning experiences transformative. Transformative learning enables us to see some aspect of the world in a new way, such that we find new meaning in it and value the experience (Girod & Wong, 2002). When students explore in depth the concept of biological adaptation, for example, they begin to notice aspects of the appearance and behaviour of animals that they did not notice before, and to appreciate the ways in which these observed traits have helped the animals to adapt to their environments (Pugh, 2002). They get more out of trips to the zoo, notice things about their pets that they never appreciated before, and so on.

Others who have addressed the classical curricular question of what is most worth teaching have reached similar conclusions. Whether they refer to powerful ideas, key ideas, generative ideas, or simply big ideas (Smith & Girod, 2003), they converge on the conclusion that certain aspects of school subjects have unusually rich potential for application to life outside of school—most notably, powerful ideas developed with focus on their connections and applications.

Powerful ideas have several distinctive characteristics. First, they are fundamental to the subject area in general and the major instructional goals in particular. They tend to cluster in the midrange between broad topics such as transportation and particular items of information such as the fact that the fuel used in airplanes is not the same as the fuel used in cars. Most are concepts, generalizations, principles, or causal explanations. Examples within transportation include the categories of land, sea, and air transportation; the progression from human powered to animal powered to engine powered transportation; the importance of transporting goods and raw materials (not just people); the role of transportation in fostering economic and cultural exchange; and the development of infrastructure to support a given form of transportation once it gets established (e.g., roads, service stations, traffic control mechanisms).

Powerful ideas are embedded within networks of knowledge and connected to other powerful ideas. Teaching about an object, tool, or action principle, for example, ordinarily would include attention to propositional knowledge (what it is, why and how it was developed, etc.), procedural knowledge (how to use it), and conditional knowledge (when and why to use it). Big ideas are more generative or transformative than other aspects of a topic and they provide the basis for worthwhile lessons and learning activities. It is not possible to improve parade-of-facts curricula simply by replacing their worksheets with better activities; one must first replace the knowledge component by shifting from parades of miscellaneous facts to networks of connected content structured around big ideas that can provide a content base capable of supporting better activities (If you doubt this, try designing worthwhile activities based on information about the states' flags, songs, birds, etc.). Big ideas lend themselves to authentic applications, of which many will be generative and even transformative; trivial facts do not.

Three Layers of Powerful Ideas for Teaching. Big ideas are multilayered. The most macro layer includes overarching cross-curricular and yearlong content. These ideas pop up frequently during planning and implementing of units and lessons. One such big idea that Barbara emphasizes throughout the year, for example, is “When you encounter something new or unusual, keeping an open mind without making value judgments allows you the opportunity to appreciate the realm of possibilities and fosters curiosity.” Another example at this macro level is the idea that logic is a powerful tool for making sense of the world and how it works. Often big ideas at this level exist without teachers being aware of how they influence their teaching.

The next level of big ideas applies throughout a unit of instruction. These big ideas can affect the structure and planning of a unit. Their absence of this level can lead to disconnected sets of lessons that focus primarily on activities. Examples of at-the-unit level big ideas include: geography affects how you meet your needs; people are more alike than different; and people make choices based on personal preferences, economic resources, local availability of potential options, climate, etc.

The final level of big ideas involves specific lessons. These ideas guide the teacher's decisions associated with discourse during lessons and related activities/assessments. Examples of lesson-specific big ideas include: trade is one way to get the things you need or want; it works best when each person has something the other wants; families change and adapt to changes; the money people pay the government is called taxes.

It can be challenging for teachers to keep all three levels of big ideas in mind as they plan, implement, and assess lessons. However, it enhances meaningfulness; is cost effective; and provides the most opportunities for powerful instruction in the time available (“If you don’t know where you are going, how will you know when you get there?”).

What are learning outcomes?

Learning outcomes are statements that specify what learners will know or be able to do as a result of a learning activity. Outcomes are usually expressed as knowledge, skills, or attitudes.

Learning outcomes should flow from a needs assessment. The needs assessment should determine the gap between an existing condition and a desired condition. Learning outcomes are statements which described a desired condition – that is, the knowledge, skills, or attitudes needed to fulfil the need. They represent the solution to the identified need or issue. Learning outcomes provide direction in the planning of a learning activity. They help to:

- Focus on learner's behaviour that is to be changed
- Serve as guidelines for content, instruction, and evaluation
- Identify specifically what should be learned
- Convey to learners exactly what is to be accomplished

What are the characteristics of good learning outcomes?

Learning outcomes have three distinguishing characteristics.

- The specified action by the learners must be observable.
- The specified action by the learners must be measurable.
- The specified action must be done by the learners.

The ultimate test when writing a learning outcome is whether or not the action taken by the participants can be assessed. If not, the outcome probably does not meet all three of the characteristics.

- who is to perform;
- what action they are to take;
- some result that must come from their action.

How do you fix an unclear outcome?

Learning outcomes which are unclear or represent elements of curriculum rather than some action the participants will demonstrate are common. Note the following examples:

1. Participants will understand the nine reasons for conducting a needs assessment.
2. Participants will develop an appreciation of cultural diversity in the workplace.

If you ask a simple question ("Can it be measured?"), you see readily that these learning outcomes have shortcomings. They are not measurable. The same outcomes can be modified by changing the action verbs.

1. Participants will list nine reasons for conducting a needs assessment.
2. Participants will summarize in writing their feelings about cultural diversity in the workplace.

Learners now have a much better idea of what is expected of them.

What is the importance of action verbs?

Since the learner's performance should be observable and measurable, the verb chosen for each outcome statement should be an action verb which results in overt behaviour that can be observed and measured.

- **Sample action verbs are:**

compile, create, plan, revise, analyze, design, select, utilize, apply, demonstrate, prepare, use, compute, discuss, explain, predict, assess, compare, rate, critique

Certain verbs are unclear and subject to different interpretations in terms of what action they are specifying. Such verbs call for covert behaviour which cannot be observed or measured. These types of verbs should be avoided:

Know, become aware of, appreciate, learn, understand, and become familiar with

From: <http://www.aallnet.org/prodev/outcomes.asp>

D.2 Learning Material for Session IV: Classroom Assessment Techniques

From Classroom Assessment Techniques by Angelo and Cross

1. Background Knowledge Probe: (Classroom Assessment Technique) CAT 1

- a. Ask 2 or 3 open ended questions or 10-20 multiple choice questions that will probe the students' existing knowledge of the concept, subject, or topic.
- b. Student response to open ended questions should be succinct, 2 or 3 sentences and these are not tests.
- c. Let students know the results and how they will affect what you do as a teacher and how it should affect what they do as learners.

2. Misconception/Preconception Check: CAT 3

- a. Start by identifying some of the most troublesome common misconceptions or preconceptions students bring to your course.
- b. Select a handful of these troublesome ideas and beliefs –ones that are likely to interfere with learning in your course.
- c. Create a simple questionnaire (multiple choice and/or short answer) to elicit information about student ideas and beliefs in this area. If you need to know how strongly the beliefs are held use a Likert scale

3. Memory Matrix: CAT 5

- a. Draw a simple chart in which row and column headings represent useful categorizing variables for important information covered in the lesson.
- b. Direct students to fill in the cells.

4. Muddiest Point: CAT 7

- a. What was the muddiest point in_____? Specify a particular text presentation, discussion, homework assignment, etc.

5. Analytic Memo: CAT 12

- a. The Analytic Memo is a simulation exercise. The students write a one- or two-page analysis of a specific problem or issue. The person for whom the memo is being written is

usually identified as an employer, a client, or a stakeholder who needs the student's analysis to inform decision making.

- b. Locate or invent an appropriate, well-focused and typical problem for students to analyze.
- c. Specify who is writing the memo and for whom it is being written as well as its subject and purpose.
- d. Develop an explicit set of instructions for the student. Specify the student's role, the identity of the audience, the specific subject to be addressed, the basic analytic approach to be taken, the length limit (usually 1 or 2 pages) and the assignment deadline.

6. Concept Map: CAT 16

- a. Select an important concept
- b. Brainstorm for a few minutes writing down terms and short phrases closely related to the stimulus.
- c. Draw a Concept Map based on the brainstorming, placing the stimulus in the centre and drawing lines to other concepts. The map might resemble a wheel with spokes, the solar system or a geographical map.
- d. After sketching the primary associations, move on to add secondary even tertiary levels of association.
- e. Determine the ways in which the various concepts are related to each other and write those types of relations on the lines connecting the concepts

7. Invented Dialogues: CAT 17

- a. Select one or more controversial issues, theories, or concepts that are important topics in your course.
- b. By inventing dialogues, students synthesize their knowledge of issues, personalities, and historical periods into the form of a carefully structured illustrative conversation. Students can create Invented Dialogues by carefully selecting and weaving together actual quotes from primary sources. They may also invent reasonable quotes that fit the character of the speakers and context.
- c. Make an instructive sheet to help students get started. Suggest a few possible topics, give time and length guidelines, explain what you expect in the way of citations, and list your criteria for a successful dialogue.

8. What's the Principle: CAT 20

- a. Step one in problem solving is to clearly identify the problem. The second step is to determine what principle(s) apply in order to solve it.
- b. Identify the principles you want students to learn in the course.
- c. Create sample problems that illustrate each of those principles. Each example should illustrate only one principle.
- d. The task could be matching the problem with a list of principles.

9. Documented Problem Solutions: CAT 21

- a. This assessment helps students to be aware of how they solve problems and to be able to describe their process.
- b. Select 2 or 3 problems.
- c. Students will solve the problem—a right answer is not so important; rather it is important that the students can describe the process they went through. If the student was unable to solve the problem, s/he can diagnose where the process went wrong.

10. Classroom Opinion Polls: CAT 28

- a. Preview the material you plan to teach, looking for questions or issues about which students may have opinions that could affect their learning.
- b. Choose one or two issues for your Classroom Opinion Poll and draw up the question or prompt and the response choices. Responses could be yes/no, from strongly disagree to strongly agree, or multiple choice.

11. Everyday Ethical Dilemmas: CAT 31

- a. Decide on one specific ethical issue or question to focus on
- b. Locate or create a short case that poses the essential dilemma realistically in a few lines.
- c. Write two or three questions that require students to take a position on the dilemma and to explain or justify that position.
- d. Ask students to write short, honest, anonymous responses.

12. Course Related Self-Confidence Surveys: CAT 32

- a. Focus on skills or abilities that are important to success in the course.

- b. Make up questions to assess students' self confidence in relation to these skills of abilities. Be as specific as possible in your questions.
- c. Create a simple survey form for gathering the data.

D.3 Learning Material for session IV: Famous Failures

History is littered with the names of eminent people who have been, at one time or another, declared “failed” or of “low ability” by the traditional examination system: Einstein (high school mathematics, of all things!), Maynard Keynes (his lowest marks in the British Civil Service examination were in economics), Gregor Mendel (failed Biology twice-the second time his examiner write , that he “jacks insight and the requisite clarity of knowledge”), Winston Churchill, Oliver Goldsmith (bottom of his B.A. class), Walter Scott (his professor at Edinburgh University remarked, “Dunce he was and dunce he would remain.”), Jonathan Swift (obtained his B.A. specialia gratia), Isaac Newton, James Watt, Wellington.....The list can go on and on .Researchers at Cambridge University discovered that their Second class Tripos graduates were just as likely as their First Classes to attain the high status of F.R.S (fellows of Royal societies).

In all these cases, should it have been the individual-or should it have been the type of examination used-which was declared as “failed” or “not up to the mark”?

D.4 Learning Material for session V: Learning Outcomes and Table of Specifications

CONTENT			BEHAVIOUR													
			Cognitive													
			Recall and Recognition				Understandi ng		Application	Criticism				Produc tion		Int t
			Terms	Trends	Classification	Methods	Interpretation	Paraphrase		Analysis of element	analysis of	Analysis of	Judgment	Composing a draft	Composing a final copy	willingness
			A	B	C	D	E	F	G	H	I	J	K	L	M	N
1.0 ideas	Relevance	1.1														
	Logic	1.2														
	Subordination	1.3														
2.0 organization	Emphasis	2.1														
	Transition	2.2														
	Paragraph structure	2.3														
	Theme structure	2.4														
3.0 style	Tone	3.1														

	Originality	3.2															
4.0 Mechanics	Spelling	4.1															
	Punctuation	4.2															
	Syntax	4.3															
5.0 choice of words	Fluency	5.1															
	Range	5.2															
	Connection-Denotation	5.3															
	Concrete-Abstract	5.4															
	Literal-Figurative	5.5															
	Level of Usage	5.6															

CONTENT

	<i>A.0 recall and recognition</i>	<i>of materials learned</i>	<i>A.1 terminology</i>	<i>A.2 specific facts</i>	<i>A.3 conventions</i>	<i>A.4 trends</i>	<i>A.5 classification and</i>	<i>A.6 criteria</i>	<i>A.7 methodology</i>	<i>A.8 principles</i>	<i>A.9 theories and structures</i>	<i>B.0 application of knowledge to</i>	<i>B.1 Non-quantitative</i>	<i>B.2 Quantitative</i>	<i>C.0 use of skills involved in</i>	<i>Understanding science</i>
1.0 Evolution																
1.1 Data Of Change																
1.2 Theories Of Change																
2.0 Diversity Of Types And Unity Of Pattern																
3.0 Genetic Continuity																
4.0 Complementarity Of Organisms And Environment																

D.5 Learning Material for Session VIII: Semester System

Semester system is one of the systems of examination which are in vogue in our country. The other systems are Annual, Biannual, term or Quarter.

This system divides the academic year into two parts called semesters. Each of these parts is of 15-18 weeks of duration. This distribution of weeks leaves 16-18 weeks undecided, which may or may not be used by the institutions for instructional purposes.

In order to attain uniformity and harmony in these systems HEC has made many serious efforts in the past few years. A compilation of those efforts have been circulated by HEC as “Guidelines” for the benefit of higher education institutions.

In this section of the module these guidelines are being presented for information, discussion and debate so that a consensus may be arrived at.

1. Key Concept 1: Standardized Scheme of Students for Four-Year Bachelor/Master/M.Phil Degree Programs

1.1 Undergraduate Structure

Total No. of Credit Hours	124-36
Semester Duration	16-18 weeks
Course Duration	8 semesters(3.5-4 years)
Number of Summer Sessions	1-2 in one academic year
Course load Per Semester for Regular Full-time Students	15-18 Credit Hours

1.2 *Masters/M.Phil Structure, after completion of 124-136 Credit Hours by Undergraduate students*

Total No. of Credit Hours	30 (minimum 24 credit hours of course work+6 credit hours of Research or course work
Semester Duration	16-18 weeks
Course Duration	1.5-2 years
Number of Regular Semesters	3-4
Number of Summer Sessions	1-2 in one academic year
Course Load Per Semester	9-12 Credit Hours

1.3 *Distribution of Courses*

- Between 124-136 credit hours are required of all undergraduate degree programs (124 represents the minimum and 136 represents the maximum credit required)
- 51-63 Credit Hours must be taken in courses prescribed for the major. Credit points are earned in courses based upon the amount of time and effort required for those courses.
- 34 credit hours must be earned taking courses outside the prescribed course for the major but within the same school as the major; meaning core, basic science.
- 30 credit hours must be earned taking multi-disciplinary courses outside the school of major.
- A course equals 3 credits and the length of the lectures should be 3hrs per week. This is typically in the form of three 1-hour lectures per week or two 1.5 hour lectures per week.

- Internship/project: every student should write a project report or will do internship in any organization relating to the discipline chosen for as specialization.

1.4 Credit Hours for (Undergraduate, Master/M.Phil)

- A credit hour means teaching a theory course for 50 minutes each week throughout the semesters.
- One credit hour in laboratory or practical work/ project would require lab contact of two hours per week throughout the semester.
- The credit hours are denoted by two digits within brackets with a hyphen in between. The first digit represents the theory part while the second (right side) digit represents the practical.
 - Thus 3(3-0) means three credit hours of theory, while 4(3-1) means a total of four credit hours, of which three are of theory while one credit hour is for laboratory.
 - The weekly contact hours of a 3(3-0) courses will be three, the contact hours of a 4(3-1) course will be six.
 - The contact hours during each week of the summer sessions will be doubled to ensure that the course is completely taught in a semester with half the duration compared with regular (fall/spring) semester.

1.5 Degree Program for Students Who Have Done 2 Years Bachelor (Under Annual System)

A 2 year Bachelor Degree (BA. BSc. Etc. pass) under the annual system is equivalent to 60 credit hours under the semester system. The candidate can get benefit of maximum 60 credit hours on course to course basis.

- A Bachelor (honours) degree program will consist of 124-136 credit hours.
 - Students after 2 year Bachelor degree (annual system) should be enrolled in Bachelor (Honours) program to complete remaining 64-76 credits hours (if the

courses taken by them during the 2 year Bachelor program (annual system) are relevant to the bachelor (Honours).

- Program courses in which the students want to enrol, e.g. a student of arts with 2 years Bachelor degree may not be eligible for Bachelor (Hons.) in science, but a student with 2 year Bachelors degree in science may be eligible for admission in BBA program.
- The institution must develop its own criteria of admission of students holding a 2 year Bachelor degree.

1.6 Admission into Masters after 2 Years Bachelor

- This is for those students who will be joining the institution after completing 2 years Bachelor (annual system).
- The students may be enrolled into the Masters program directly by offering 94-106 credit hours, but they have to fulfil the following requirements:
 - Will earn first 64-76 credit hours at undergraduate level, and then
 - Will earn 30 credit hours at masters/ M.Phil level.
- The institute is obliged to issue a Bachelor (Hons) degree to the students after completing the undergraduate course requirements, i.e. 64-76 credit hours, despite the student has been enrolled directly into masters program.

1.7 Fall / Spring Semester

- There will be two regular semesters (fall and spring) in an academic year. Each semester will be spread over 16-18 weeks (inclusive of exams).
- Universities / institutions are at liberty to enrol students (if they fulfil their criteria) for any semester or for any single course and issue transcript with letter grades at the end of the semester.

1.8 Summer Semester

- A university may offer one or two summer sessions with duration of 8 weeks each.
- The contact hours during the summer session will be doubled to ensure that the course is completely taught in a summer session with half of the duration compared to a regular (fall/ spring) semester.

1.9 Course Load for All and Spring Semester

1.9.1 Undergraduate Students

A regular student is required to take 12 credit hours per regular semester, but however, a student can take a maximum of 18 credit hours, provided the student fulfils condition.

1.9.2 Masters / M.Phil Students

A regular student is required to take 9 credit hours per regular semester, but however, A Student can take a maximum of 12 credit hours, provided the students fulfils condition mentioned in Point no. 8.

1.9.3 Course load for summer semester, undergraduate students

Undergraduate students' course load is 6 credit hours.

1.9.4 Course loads for summer semester, Masters / M.Phil student

Graduate students can take up to 6 credit hours during summer system.

2. Key Concept 2: Requirements of Semester System

2.1 Requirements for Maximum Course Load in a Regular Semester

- An undergraduate student may be allowed to take up to 18 credit hours and graduate students up to 12 credit hours (being maximum courses load) only if s/he

has a C.GPA of 3.5 or above and that too with the permission of the head of the department.

- The head of department may also allow maximum course load to any student, graduate or undergraduate **when the student is graduating in that very semester**, e.g. an undergraduate student with C.GPA of 3.2 needs 18 credit hours to graduate or a Masters/ Mphil student with a C.GPA 3.2 needs 15 credit hours to graduate. In this situation the head of the department can make an exception for any particular student by allowing him/her to take maximum course load as this will be the student's last and graduating semester.

2.2 Academic Calendar

- Every university will publish a schedule of complete academic year for its fall, spring and summer semesters for the convenience of students and faculty members mentioning the following:
 - a. Semester starting date
 - b. Holidays during the semester
 - c. Semester termination date
 - d. Final exam week
 - e. Grade notification date
- Students are responsible to meet the requirement and deadline published for each semester in the academic calendar of the university. Students will be expected to know and adhere to the rules, regulation, course loads, prerequisites, and policies of university, as well as those of the departments/ institutes in which they are enrol.

2.3 *Withdrawal / Change of Course(S)*

- A student with the consent of the concerned Dean may be allowed to (a) change a course within 7 days of the commencement of a semester, and (b) drop a course within 2 weeks of the commencement of semester.
- Withdrawal from a course will be allowed latest up to one week before the 2nd in-semester examination (i.e. by the end of 15th week) under approval by the Dean/Head of Department of the institute. Withdrawn course will appear on transcript with the letter grade **W**, will not be treated as **F** grade.
- University may have their own criteria for withdrawal keeping in line with the above guidelines.

2.4 *Repeating Courses*

- Whenever a student fails or gets an 'F', grade, s/he has to repeat the courses, whenever offered.
- Undergraduate students may be allowed to repeat a course in which s/he has obtained grade 'D'
- The institution may define maximum number (≤ 6) of courses that students may be allowed to repeat.
- In case a student repeats the courses which has already been taken, the old grade will be substituted with the new grade, (for CGPA calculation) but in case a student takes a new course in lieu of the course in which s/he failed, both the grades will reflect on his/her transcript, i.e., old course grade and new course grade.

2.5 *REPEAT COURSES FOR MASTERS/MPHIL*

- A graduate student with a C grade can repeat the course if he/she desires to improve. Each institution may define the maximum number of courses (≤ 3) that a student may repeat at the Graduation level.

2.6 CGPA Required For Degree Completion (Undergraduates Masters/Phil

- For graduation, the minimum qualifying C.GPA for Bachelors and masters Students are 2.00 and 2.50, respectively.
- Whenever an undergraduate students C.GPA decreases from 2.0, or a graduate students C.GPA decreases from 2.5, s/he will be on 1st probation for the next semester. If the undergraduate student does not come out by increasing his/her C.GPA to 2.0 Or a graduate student does not come out by increasing his/her C.GPA to 2.5, then again, s/he will go on “Last Probation” . if the student who was earlier on 1st probation, does not come out in the last probation by achieving the minimum desired C.GPA, s/he shall be dropped from the institute and cannot be re-admitted by the same institute.

2.7 Transfer of Credit Hours for Undergraduates /Masters/M.Phil

- Every university will develop its own criteria for transferring the credit hours. However, some guidelines are mandatory for all the universities / institutes to follow.
- No credit hour of a course will be transferred if the grade is less than C for undergraduate and B for graduate.
- Universities are at liberty to enrol students (if they fulfil their criteria) for any semester or for any single class and issue the students a transcript for the courses done.

2.8 Requirement for the Award of Degrees

2.8.1 Undergraduate Students

- A student must have a regular admission in the undergraduate program of the institute, and should earn a minimum of 60 credit hours out of a total of 124–130

credit hours from the institute from where s/he will be entitled for the degree (this Para should be read in conjunction Para 16).

2.8.2 Masters / M.Phil Students

- A student must have a regular admission in the Masters / M.Phil program of the institute, and should earn a minimum of 30 credit hours from the institute from where he/she will be entitled for the degree. (24 credit hours of course work and 6 credit hours of research)
- 6 credit hours of research is mandatory for Masters / M.Phil level, however, exemption may be allowed only in those cases where research is not possible. (This, exemption from research can only be for Non-Science subjects / disciplines)
- The Head of Department may allow the student to do course work of 6 credit hours in lieu of 6 credit hours of research. This exemption cannot be allowed if the student wants to do a Ph.D.
- This exemption can only be allowed if the student wants to terminate his/ her course at Masters / M.Phil program.

2.9 Student Grievance against Any Course Instructor

- All institutions should have a 3 member committee headed by a senior faculty member to redress the grievances of the students about any course instructor or grades or for any other issue.
- A student must approach the Head of the institute for grievances on grade within 5 days of the receipt of the grade. The Head of the institute /Department shall forward the grade grievance to a 3 member committee and it will be mandatory on the committee for hearing both sides (student and the instructor), and will give a final decision within 5 days or before the start of registration for the new semester whichever comes early. The decision of the committee will be final.

- A Department Committee headed by the Chairman / Senior Faculty Members will be constituted to check randomly a few papers of the final semester examination for uniformity of scoring and covering of the course content.

2.10 Course on Pass / Fail Basis for Undergraduates

- Courses can be taken on pass / fail basis. These courses can be taken only out of elective courses, and the grades awarded toward these courses will NOT be considered in calculating the GPA or CGPA. If the student fails, s/he has to repeat the course (the repeat course policy will apply). A maximum of 9 credit hours of courses can be taken on pass / fail basis.
- No course can be taken on pass / fail basis at Masters / MPhil level

2.11 Cancellation of Admission

- If a student fails to attend any lecture during the first four weeks after the commencement of the semester as per announced schedule, his/her admission shall stand cancelled automatically without any notification.

2.12 Course File

Maintenance of course file is compulsory for the teacher. It will have complete record of everything that happened during the semester. The course file will contain:

- Description of course/course contents
- Course coding
- Weekly teaching schedule dates of mid-semester examination
- Grading policy will identify each activity. Such as homework , quizzes, mid-semester examination, final examination, term papers
- Copy of each homework assignment
- Copy of each quiz given
- Copy of mid semester examination

- Grading sheets of the courses detailing statistical data on the graded obtained by students.
- Difficulties / problems faced during classroom / course delivery.

2.13 *Freezing of a Semester*

- If a student freezes a semester(s), s/he will retake admission in the same semester. No freezing during the semester is allowed / the maximum duration of the degree program shall remain the same.
- However, the university may develop any criteria for freezing a semester.

2.14 *Teacher Evaluation*

- In semester system the first step is the scrutiny and approval of the course outline by the Dean. Course instructor plays a very pivotal role. There is very little control over the instructor when s/he is in the classroom.
- It is mandatory on the head of the institute to have every course instructor evaluated by the students on what they have been taught by their instructor. This evaluation must be preferably done on-line. However if on-line is not possible then it has to be done manually. It must be done in the last week of the semester (without the presence of the course instructor so as to maintain impartiality). This evaluation should be objective and should be shared with the concerned course instructor for his/her improvement/ knowledge.
- Evaluation done by the students will be completely anonymous, i.e. the student will not be required to indicate, name, or roll number or registration numbers or by any other means whatsoever.

2.15 Rules of Conduct

- 1.** Assessment strategies, quality of test items and examination processes cannot be improved without intensive professional training of the staff involved in the examination.
 - a.** Pertinent training should be arranged at regular basis for all the staff concerned
 - b.** With examination: from controller of Examination to the junior clerk in
 - c.** Examination Department, paper assessors, paper setters and examiners. The
 - d.** Aim of the training should be to evolve an effective reliable, valid, secure and transparent examination system.
- 2.** Course objectives in terms of students' learning outcomes and table of specification should be available to all concerned persons including students.
- 3.** Choice of questions in examination, e.g., 5 out of 8 questions encourages selective study, and should be abolished.
- 4.** Grace marks in examinations to pass the candidates should not be allowed in any circumstances by the year 2007. a system of moderation/arbitration, however, must be evolved by then for all institutions with consensus.
- 5.** Paper setting for the Final Examination setting should preferably be done by a panel of 2 or more examiners. Wherever applicable, in the annual system of examination, final papers shall be reviewed by a neutral examiner.
- 6.** Most of the questions should assess higher level of cognition, i.e., conceptual knowledge and application of learned material in practical field.
- 7.** Where applicable, a "key" (agreed answer/solution) should be prepared by the paper setters before the question paper is used in the examination. The "key" should also give the weightage and detailed breakdown of the marks for subcomponents (only for objectives; not for descriptive papers). In descriptive questions, where writing of exact solution may not be practical, the paper setter must write answer to key points of each question that are required from the

students. The answer/solution should be displayed or made accessible to students when they review their answer books after marking by the examiner.

8. Assessment Tools such as Use of Multiple Choice Question (MCQs) and short essay questions (SEQs) should be encouraged to increase the content validity of question papers. Descriptive questions should preferably be done away with except where writing skills, concepts or ability to dialogue needs to be evaluated in detail e.g. in the case of discipline of Social Sciences etc.
9. Practical/project should always be conducted by a panel of examiners including external and internal examiners. It is also recommended that marking of each examiner should be reflected separately.
10. A policy of complete transparency can be adopted in Semester/Term system where candidates are guaranteed an opportunity to discuss the marks awarded to them with the concerned reflected separately.
11. In case a student fails in an examination, he/she should wait for at least six months. Before appearing for second chance examination.
12. All examinations to be held from year 2007 will follow the testing policy of giving “No Choice” at under graduate level.

3. Key Concept 3: Scoring Student Performance

3.1. Attendance

- Attendance in classes is normally considered mandatory, especially in a semester system.
- Each institution may develop a policy for maximum attendance ($\leq 70\%$) in a course required to obtain a passing grade in the course.

3.2. Examination

- In each semester , students may be required to appear in quizzes , mid term , final examination, give presentation, participate in group discussion , and submit

projects/assignment/ lab reports. These (to be determined by the teacher concerned) will have different weightage contributing towards the overall assessment in percent marks. this weight age can be determined, based on the following guidelines:

Nature of Examination	Course with Lab	Course without Lab
Quizzes	5 – 10%	5 – 15%
Mid Semester Examination	20 – 30%	30– 40%
Assignments	5 – 10%	5– 10 %
Practical/Project (if applicable)	10 – 20%	–
Final Examination	–	40– 50%

- In case a student joins a course after it has started, s/he will be responsible for any missed quizzes, assignments and lectures, the marks in missed quizzes etc will be considered zero while make-up tests, assignments, projects and labs can be arranged in consultation with the teacher/Head of Department.
- There will be no supplementary/ Special Examination in a semester; if a student fails in a course, he/s is required to repeat it.

3.3. Computation of Semester Grade Point Average (GPA) And Cumulative Grade Point Average (CGPA)

- SEMESTER Grade Point Average (GPA) and Cumulative Grade Point Average (C.GPA) will be calculated using the following relationship:

$$\text{GPA} = \frac{\text{Sum over Courses in Semester (Course Credit Hours x Grade Point Earned)}}{\text{Total Semester Credit Hours}}$$

$$\text{C.GPA} = \frac{\text{Sum over all courses in all semesters (Course Credit Hours x Grade Point Earned)}}{\text{Total Credit Hours in all Semesters}}$$

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