IMPLEMENTATION &EVALUATION STRATERG

INTRODUCTION

Evaluation plays an important role in the teaching-learning process. The major objective of any teaching –learning endeavor is to ensure the quality of the product which can be assessed through learner's evaluation.

The purpose of student evaluation is to determine the extent to which the general and the specific objectives of curriculum have been achieved. Student evaluation is also important from the point of view of ascertaining the quality of instructional processes and to get feedback for curriculum improvement. It helps the teachers in determining the level of appropriateness of teaching experience provided to learners to meet their individual and professional needs. Evaluation also helps in diagnosing learning difficulties of the students. Evaluation is of two types Formative and Summative (Internal and External Evaluation).

Formative Evaluation

It is an ongoing evaluation process. Its purpose is to provide continuous and comprehensive feedback to students and teachers concerning teaching-learning process. It provides corrective steps to be taken to account for curricular as well as co-curricular aspects.

Summative Evaluation

It is carried out at the end of a unit of instruction like topic, subject, semester or year. The main purpose of summative evaluation is to measure achievement for assigning course grades, certification of students and ascertaining accountability of instructional processes. The student evaluation has to be done in a comprehensive and systematic manner since any mistake or lacuna is likely to affect the future of students.

In the present educational scenario in India, where summative evaluation plays an important role in the educational process, there is a need to improve the standard of summative evaluation with a view to bring validity and reliability in the end-term examination system for achieving objectivity and efficiency in evaluation.

STUDENT'S EVALUATION AREAS

The student evaluation is carried out for the following areas:

- Theory.
- Practical Work (Laboratory, Workshop, Field Exercises).
- Project Work.
- Industrial Training.
- General Proficiency.

A. Theory

Evaluation in the theory aims at assessing students' understanding of concepts, principles and procedures related to a course/subject, and their ability to apply learnt principles and solve problems. The formative evaluation for theory subjects may be caused through sessional / class tests, home assignments, tutorial work, seminars and group discussions. For end-term evaluation of theory, the question paper may comprise of three sections;

Section -1

It should contain objective type items e.g. multiple choice, matching and completion type. Total weightage to Section -1 should be of the order of 20 percent of the total marks and no choices should be given in this section. The objective type items should be used to evaluate students' performance in knowledge, comprehension and at the most application domains only.

Section – 2

It should contain six short answer /completion items. The weightage to this section should be of the of the order of 30 percent of the total marks. Again, no choice should be given in section – 2.

Section – 3

It may contain five questions. Total weightage to this section should be of the order of 50 percent of the total marks. Some built in, internal choice of about 50 percent of the questions set, can be given in this section.

Table 2 : Suggested Weightage to be given to different ability levels

Abilities	Weightage to be assigned
Knowledge	10-30 percent
Comprehension	40-60 percent
Application	20-30 percent
Higher than application i.e. Analysis, Synthesis and Evaluation	Up to 10 percent

B Practical Work

Evaluation of student's performance in practical work (Laboratory experiments, Workshop practical's /fields exercises) aims at assessing students ability to apply or practice learnt concepts, principles and procedures, manipulative skills, ability to observe and record, ability to interpret and draw conclusions and work-related attitudes. Formative and summative evaluation may comprise of weightages to performance on task, quality of product, general behavior and it should be followed by viva-voce.

C Project Work

The purpose of evaluation of project work is to assess student's ability to apply, in an integrated manner, learnt knowledge and skills in solving real life problems, manipulative skills, ability to observe, record, creativity and communication skills. The formative and summative evaluation may comprise of weightage to nature of project, quality of product, quality of report and quality of presentation followed by viva-voce.

D Industrial Training

Evaluation of professional industrial training report and viva-voce/presentation aims at assessing students' understanding of materials, industrial processes, practices in the industry/field and their ability to engage in activities related to problem-solving in industrial setting as well as understanding of application of learnt knowledge and skills in real life situations. The formative and summative evaluation may comprise of weightages to performance in testing, general behavior, quality of report and presentation during viva-voce.

E General Proficiency-

In the curriculum of each semester, a provision of marks/grade for the General Proficiency exists. These marks are awarded on the basis of general performance, behavior/discipline and participation in Student Activities. General Proficiency will comprise of various co-curricular activities like games, hobby clubs, seminars, declamation contests, extension lectures, NCC, NSS, cultural activities and discipline etc. The general proficiency will be calculated as-

General Proficiency Calculations and descriptor-

Table-1

General Proficiency Percentage	Grade	Descriptions
≥ 90 to 100	O	Outstanding
≥ 80 to 90	A	Excellent
≥ 70 to80	B	Very Good
≥ 60 to 70	C	Good
≥ 50 to 60	D	Average
< 50	F	Fail

***Students will get less than 50 percentage marks in general proficiency will be consider fail in concern semester. In case of grade "O" or "F" Institute have to given sufficient evidence in support.**

ASPECTS OF QUESTION PAPER SETTING

Validity and reliability are the most important considerations in the selection and construction of evaluation procedures. First and foremost are the evaluation tools to measure the specific outcomes for which they are intended to measure. Next in importance is reliability, and following that is a host of practical features that can be classified under the heading of usability.

For weightage of marks assigned to formative (internal) and summative (external) evaluation and duration of evaluation has been given in the study and evaluation scheme of the curriculum document. The working group found it very difficult to detail out precisely the contents of subject on **languages** and therefore teachers may send guidelines to respective examiners for paper setting to maintain objectivity in evaluation.

RECOMMENDATIONS FOR EFFECTIVE CURRICULUM IMPLEMENTATION

This curriculum document is a Plan of Action (POA) and has been prepared based on exhaustive exercise of curriculum planning and design. The representative sample comprising selected senior personnel (lecturers and HODs) from various institutions and experts from industry/field have been involved in curriculum design process.

The document so prepared is now ready for its implementation. It is the faculty of polytechnics who have to play a vital role in planning instructional experiences for the courses in four different environments viz. class-room, laboratory, library, and field and execute them in right perspective. It is emphasized that a proper mix of different teaching methods in all these places of instruction only can bring the changes in stipulated students behavior as in the curriculum document. It is important for the teachers to understand curriculum document holistically and further be aware of intricacies of teaching-learning process (T-L) for achieving curriculum objectives. Given below are certain suggestions which may help the teachers in planning and designing learning experiences effectively. These are indicative in nature and teachers using their creativity can further develop/refine them. The designers of the programme suggest every course teacher to read them carefully, comprehend and start using them.

(A) UBTE / JEE & TRD Cell Suggestions:

1. Curriculum implementation takes place at programme, course and class-room level respectively and synchronization among them is required for its

success. The first step towards achieving synchronization is to read curriculum document holistically and understand its rationale and philosophy.

2. Uttarakhand Board of technical Education (UBTE) will make the academic plan available to all polytechnics well in advance. The Principals have a great role to play in its dissemination and, percolation up to grass –root level. Polytechnics in turn are supposed to prepare institutional academic plan by referring state level UBTE plan.

3. HOD of every Department along with in charges of other departments viz. Mathematics, English, Physics, Chemistry etc. are required to prepare academic plan at department referring institutional academic plan.
4. All lecturers are required to prepare course level and class level lesson plans referring departmental academic plan.

(B) Course Level Suggestions

Teachers are educational managers at class room level and their success in achieving course level objectives lies in using course plan and their judicious execution which is very important for the success of programme by achieving its objectives.

Polytechnic teachers are required to plan various instructional experiences viz. theory lecture, expert lecture, lab/workshop practicals, guided library exercise, field visits, study tours, camps, etc. In addition, they have to carry out progressive assessment of theory, assignments, library, practicals, and field experiences. Teachers are also required to do all these activities within a stipulated period of 16 weeks which is made available to them in the academic plan at UBTE level. With the amount of time to their credit, it is essential for them to use it judiciously by planning all above activities properly and ensure execution of the plan effectively.

Following is the list of suggestions for subject teachers to carry out T-L process effectively:

1. Teachers are required to prepare a course plan, taking into account departmental academic plan, number of weeks available, course to be taught, different learning experiences required to be developed, etc.

2. Teachers are required to prepare lesson plan for every theory class. This plan may comprise of content to be covered, learning material

(transparencies, VCDs, Models, etc) for execution of a lesson plan. They may follow steps for preparing lesson plan e.g. drawing attention, state instructional objectives, help in recalling pre-requisite knowledge, deliver planned subject content, check desired learning outcome and reinforce learning etc.

3. Teachers are required to plan for expert lectures from field/industry. Necessary steps are to plan in advance, identify field experts, make correspondence to invite them, take necessary budgetary approval, etc.

4. Teachers are required to plan for guided library exercises by identification of course specific experience requirement, setting time, assessment, etc. The tutorial assignment and seminar can be thought of as terminal outcome of library experiences.

5. Concept and content based field visits with appropriate releases (day-block) may be planned and executed for such content of course which otherwise is abstract in nature and no other requisite resources are readily available in institute to impart them effectively.

6. There is dire need for planning practical experiences in right perspective. These slots in a course are the avenues to use problem based learning/experimental learning approach effectively. The development of lab instruction sheets for the course is a good beginning to provide lab experiences effectively.

7. Planning of progressive assessment encompasses periodical assessment in a semester, preparation of proper quality question paper, assessment of answer sheets immediately and giving constructive explicit feed back to every student. It has to be planned properly; otherwise very purpose of the same is lost.

8. The co-curricular activities like camp, social gathering, study tour, hobby club etc. may be used to develop generic skills like task management, problem solving, managing self, collaborating with others etc.

9. Where ever possible, it is essential to use activity based learning rather than relying on delivery based conventional teaching all the time.

10. While imparting instructions, emphasis may be laid on the development of cognitive, psychomotor, reactive and interactive skills in the students.

11. Teachers may take working drawings from the industry/field and provide practices in reading these drawings.

12. Considerable emphasis should be laid in discipline specific contracting and repair and maintenance of machines, tools and installations.

13. Teachers may take initiative in establishing liaison with industries and field organizations for imparting field experiences to their students.

14. Students be made aware about issues related to ecology and environment, safety, concern for wastage of energy and other resources etc.

15. Students may be given relevant and well thought out minor and major project assignments which are purposeful and develop practical skills. This will help them in developing creativity and confidence for their gainful employment (wage and self).

16. A Project bank may be developed by the concerned department of the polytechnics in consultation with related industry, Research Institutes and other relevant field organizations in the state.

Teaching Aids, Their Needs, Types and Importance of Teaching Aids In Teaching Learning Process-

The process of teaching - learning depends upon the different type of equipment available in the classroom/Learning resources Utilization Centre (LRUC) . There are many aids available these days like, audio, visual and audio-visual aids. They have very much importance in TLP (Teaching Learning Process).

Meaning of Teaching Aids

As we all know that today's age is the age of science and technology. The teaching learning programmes have also been affected by it. The process of teaching - learning depends upon the different type of equipment available in the classroom.

Need of Teaching Aids

1) Every individual has the tendency to forget. Proper use of teaching aids helps to retain more concept permanently.
2) Students can learn better when they are motivated properly through different teaching aids.
3) Teaching aids develop the proper image when the students see, hear taste and smell properly.
4) Teaching aids provide complete example for conceptual thinking.
5) The teaching aids create the environment of interest for the students.
6) Teaching aids helps to increase the vocabulary of the students.
7) Teaching aids helps the teacher to get sometime and make learning permanent.
8) Teaching aids provide direct experience to the students.

Types of Teaching Aids

There are many aids available these days. We may classify these aids as follows

- Visual Aids
- Audio Aids
- Audio - Visual Aids

1) Visual Aids

The aids which use sense of vision are called Visual aids. For example :- actual objects, models, pictures, charts, maps, flash cards, flannel board, bulletin board, chalkboard, overhead projector, slides etc. Out of these black board and chalk are the commonest ones.

2) Audio Aids

The aids that involve the sense of hearing are called Audio aids. For example :- radio, tape recorder, gramophone etc.

3) Audio - Visual Aids

The aids which involve the sense of vision as well as hearing are called Audio- Visual aids. For example :- television, film projector, film strips,Verious learning Applications etc.

Importance of Teaching aids

Teaching aids play very important role in Teaching- Learning process. Importance of Teaching aids are as follows :-

1) Motivation

Teaching aids motivate the students so that they can learn better.

2) Clarification

Through teaching aids , the teacher clarify the subject matter more easily.

3) Discouragement of Cramming

Teaching aids can facilitate the proper understanding to the students which discourage the act of cramming.

4) Increase the Vocabulary

Teaching aids helps to increase the vocabulary of the students more effectively.

5) Saves Time and Money

6) Classroom Live and active

Teaching aids make the classroom live and active.

7) Avoids Dullness

8) Direct Experience

Teaching aids provide direct experience to the students

ASSESMENT/EXAMINATION

Credits Framework- The examination/assessment will we carry out through credit point system. A Credit is (normally) an indication of the "volume" or "weight" of the outcomes of learning which make up a qualification. It can also be seen as points awarded at a level, as a quantified means of expressing an equivalence between programmes of learning and as an award made to a learner in recognition of the verified achievement of (implied or) designated learning outcomes at a specified level. Considered as a "currency", Credit is usually expressed as a numerical value linked to (notional) learning time – i.e. all learning activities required for the achievement of a set of outcomes.

By bringing all learning within a common system, credit give systemic value to non-formal and experiential learning allowing previous learning to count as qualifications.

The process of Credit Transfer is a process where learners are able to register learning outcomes achieved in one qualification at one time and have them counted towards another qualification later on. Credit Transfer works between systems or sub-systems (especially between institutions and sectors). The credit transfer value (specific credit) – is the value of prior learning relative to the qualification into which it will be transferred. Credit in practice is based on the match between learning outcomes already achieved and the learning outcomes required for a qualification. The credits of each subject is defined in evaluation scheme. The result of students will be declare in two ways. In semester SGPA (Semester Grade Point Average) will be calculated as-

Grade Calculations and Descriptor-

Table-2

Subject Percentage	Subject Grade Point	Subject Grade	Descriptions
> 90 to 100	10	O	Outstanding
> 80 to 90	9	A^+	Excellent
> 70 to80	8	A	Very Good
> 60 to 70	7	B^+	Good
> 50 to 60	6	B	Above Average
> 40 to 50	5	C	Average
= 33 to 40	4	P	Pass
< 33	0	F	Fail

Calculation of Semester Grade Point Average (SGPA)=

Table-3

Subject	C.P.	Grade	Grade Point (G.P)	C.P. x G.P.
I	3	A	8	3x8=24
II	4	B^+	7	4x7=28
III	3	B	6	3x6= 36
IV	3	O	10	3x10=30
V	3	C	5	3x5=15
VI	4	B	6	4x6=24
	∑ C.P.=20			∑(C.P. x G.P.) =139

Formula for Calculating SGPA (Semester Grade Point Average)

SGPA =∑ (C.P. X G.P.) / ∑ C.P.

$SGPA_1$= 139/20= 6.95

If the student has a SGPA of less than 4, then the student will compulsorily have to appear again for exams of all subjects. If any student has SGPA more than 4 but in any subject has G.P. less then 4 in that case student will give back paper in that particular subject.

Cumulative Grade Points Average (CGPA)- At the end of each year students will be promoted to next year on the bases of CGPA. The CGPA will be calculated as-

Table-3

1st Year	
Sem -1	Sem -2
$\sum C.P_1=20$ $SGPA_1=6.9$	$\sum C.P_2==22$ $SGPA_2=7.9$
$\sum C.P_1 \times SGPA_1=138$	**$\sum C.P_2 \times SGPA_2=173.8$**

$CGPA_1 = (\sum C.P_1 \times SGPA_1+\sum C.P_2 \times SGPA_2) / (\sum C.P_1+\sum C.P_2)$

$= 311.8/42$

$= 7.42$

So as per Table-1 students' grade will be "A"

*Similarly, year 2 and 3 CGPA will be calculated.

Calculation of Final Year CGPA-

A=$C.P._1 \times .25$ (Total of the credit that student got in Ist Year X .25)

B=$C.P._2 \times 1.0$ (Total of the credit that student got in IInd Year X 1.0)

C=$C.P._3 \times 1.0$ (Total of the credit that student got in IIIrd Year X 1.0)

X= $(\sum C.P_1+\sum C.P_2) X.25$ (Total of the credits in Ist Year X .25)

Y=$(\sum C.P_3+\sum C.P_4) \times 1.0$ (Total of the credits in IInd Year X 1.0)

Z=$(\sum C.P_5+\sum C.P_6) \times 1.0$ (Total of the credits in IIIrd Year X 1.0)

Average Percentage-

$P = (A + B + C)/(X + Y + Z) * 100$

Final Grade Calculations and descriptor-

Table-4

Average Percentage (P)	Final CGPA	Final Grade	Descriptions
> 90 to 100	10	O	Outstanding
> 80 to 90	9	A^+	Excellent
> 70 to80	8	A	Very Good
> 60 to 70	7	B^+	Good
> 50 to 60	6	B	Above Average
> 40 to 50	5	C	Average
= 33 to 40	4	P	Pass
< 33	0	F	Fail

***Students with maximum 06 back papers in Ist year can be promoted to IIndYear (IIIrd Semester),but students having more than 06 back papers in Ist Year will go for year back and they have to re-appear and pass all Ist year subjects. Similar methodology will be applicable for IIIrd Year(Vth Semester).Diploma will be awarded only when the student passes all the subjects for three years**