UNIT – V

ASSESSMENT IN PEDAGOGY OF MATHEMATICS

Criteria for Teacher Evaluation - Concept of Test, Measurement and Evaluation - Differentiate between Assessment and Evaluation – Standardization of Test, Principles and steps involved in the construction of achievement test – Blue Print and Question Pattern - Feedback Devices: Meaning, Types, Criteria, Guidance as a Feedback Devices: Assessment of Portfolios, Reflective Journal, Field Engagement using Rubrics, Competency Based Evaluation.

1.1 Measurement

Measurement is the quantitative outcome of instruction. It is a matter of determining how much or how little and how much greater. It is used to access the physical characteristics and external future features of man for example. E.g., Height, Weight etc., It is used to express that how much a particular quantity is present. We can't measure any object we measure only characteristics like weight, Height, Weight. Assigning the numerical value for particular characteristics is known as Measurement. Thondike and Hagen (1986) defined measurement as "the process of quantifying observations about a quality or attribute of a thing or a person".

The process of measurement belongs three steps

1. Identifying and defining the character of a particular thing. Eg. Temperature, Height, Weight.
2. Fixing the characteristics which are open and measurable.
3. Translating the observed the quantitative statement to Numerical Value.

Evaluation

Evaluation is more than testing and examining. It is measuring and analysing the achievement of the student with their educational objectives. This result will help us to fix the future plan and methods to achieve the educational objectives. Evaluation is not only important to the students it is also important for teacher also. Importance of evaluation is bringing out solid evidence about student's present level and based on this evidence we can decide how much training is necessary to achieve their goals.

According to Kothari Commission, Evaluation is a continuous process. R.C.Sharma defines evaluation as a continuous and comprehensive process which takes place in the school and outside the school, and involves the participation of the pupils, teacher, parents and community with a view to make changes in the child and in the whole education process. According to Dandekar evaluation is systematic process of determining the extent to which education objectives are achieved by pupils.

Assessment

Assessment is an integral part ofteaching-learning process as it is a prime tool for monitoring the progress and shaping learning. Now days, Mathematics is being viewed not only as a traditional prerequisite subject for prospective scientists, engineers, businessman etc, but, also as a fundamental aspect of literacy for the twenty-first century. Keeping this in mind, about the comprehensive view of Mathematics and its role in society, assessment should aim at much more than just the test given at the end of course.

ROLE OFASSESSMENT IN MATHEMATICS

The main aim of assessment is to collect information of learner's achievement and progress and provide direction for ongoing teaching and learning process. Assessment can be done through both formal and informal activities. Assessment in Mathematics refers to the process of identifying, gathering and interpreting information about learners' mathematical learning. Assessment is the means, which deduces what learners know and what they do not. It suggests teachers, learners, parents, and policymakers something about what learners have learned and what more should be done in order to improve performances in Mathematics. Assessment has a comprehensive meaning just not limited to evaluation of student's performances. Assessment can be used for following purposes:

Assessment for learning: Assessment for learning occurs during the learning process. Information obtained by this type of assessment is used by the teachers to modify their teaching strategies, and learners use it to make changes in their learning strategies. This approach of assessment helps teachers to appraise the learners to monitor their learning; and guide the instruction at process and provide feedback helpful to learners. It provides opportunities for learners to develop an ability to evaluate themselves; make judgments about their own performance and make necessary improvement.

Assessment as learning: Assessment as learning means an awareness of learners regarding how they learn and use that awareness to make necessary adaptations in their learning process. Therefore, they take an increased responsibility for their learning. It involves setting of goal, monitoring the progress and contemplating on results. It occurs throughout the learning process.

Assessment of learning: Assessment of learning refers to a review process which occurs at the end a learning unit. It provides measures of achievement for the purpose of grading. It informs learners, teachers and parents, as well as other stakeholders of the community about achievement at a certain point of time to provide information regarding success.

Assessment in Mathematics must be planned keeping in mind its goals. Assessment for and of learning, each has a role to play in supporting and improving   learner learning, and so, must be   appropriately balanced. Assessment must be embedded in the learning process and interconnected with curriculum and instruction.

Difference between Evaluation and Assessment

Assessment	Evaluation
Assessment is a process of Evaluation is described collecting and using data for the purpose of improvement.	Evaluation describes as an act of passing, Judgment basis of evidence.
Assessment pays attention to teaching and learning.	Evaluation focuses final outcome.
Assessment is done at the beginning of the inquiry.	Evaluation is usually done at the end.
It is Formative	It is Summative.
It is process oriented	It is judgmental
Provides feedback on performance and are as of improvement.	Determine to which objectives are achieved.
Based on observation and positive and negative points.	Based on the level of quality as per set standard.
Set by both the parties jointly.	Set by the evaluator.
It is absolute.	It is comparative.

Types of Evaluation

We already know that evaluation is a continuous process. Evaluation is concerned with teacher, pupils and the content. Evaluation is related to the instructional activities, effectiveness for the curriculum material and learning difficulties of the pupils. The types of evaluations are

1. Formative Evaluation
2. Summative Evaluation

Formative Evaluation

The evaluation used during the instruction to improve the instructional process is known as formative evaluation. The Evaluation is concerned with the text, Supplementary materials and classroom activities. It is to provide immediate feedback to the students regarding the instructional material. In formative evaluation quiz, essay, practical etc., are used and the information is given to the students for restudy what they did not understand. It helps to identify learning problems, indicates the need for curriculum revision, new laboratories films etc.,

Summative Evaluation

After the learning or instruction has taken place judgement is made about the student teacher or curriculum with regard to the effectiveness of learning or instruction. This kind of evaluation is known as summative evaluation. Here evaluation is in terms of grades. It is concerned with the unit or several interrelated chapters and it is not to forget many related chapters or not to abandon any part. The data are collected for only grading and not used often. The main purpose of this evaluation is grading, promoting and issuing certificates. The procedure for summative evaluation and formative evaluation are same.

Diagnostic Test

A diagnostic test is used to find out the weakness and strength of the individual's performance. Diagnostic tests can be conducted in reading, writing and arithmetic skills. Diagnostic tests help to judge student's ability to follow our teaching procedure. This is conducted to suggested, plan and implements remedial measures. Diagnostic test is a form of pre-assessment that allows a teacher to determine students' individual strengths, weaknesses, knowledge, and skills prior to instruction. It is primarily used to diagnose students' difficulties and to guide lesson and curriculum planning.

Standardization of Test

Standardized tests are those which have been developed and defined by research studies. They are pretested, field tested and experimentally tried out. No doubt they are superior to locally developed tests. The necessary condition for a standardized test is that it should have norms. The norms are used to interpret the results. Besides norms, the test is scored by using a key which designates the right answers. Tests made up and scored by teacher with a key about which we do not have norms are not standardized tests.

Advantages

1. High degree of validity and reliability.

2. Easy of administration and scoring.

3. Tests are of good quality as they are prepared by experts.

4. Interpretation of score is fairly easy as norms are furnished.

Disadvantages

1. Uniformity among the response.

2. Giving importance for wider coverage not depth.

ACHIEVEMENT TEST

Achievement test may be defined as change in the behaviour of students in the desired direction. It is very important in the process of evaluation. N.M.Downie states that measures the attainment of an individual after a period of training is called an achievement test. In school various achievements were constructed to measure the learning level of students. An achievement test looks for to measure specific knowledge of learner. It is used to determine academic standard. It is considered a necessary evil in the system of examination. In recent days the achievement tests have been refined and developed to test the abilities and skill rather than the knowledge. These tests are universally used by teachers mainly for the following purposes:

To measure whether the learners have achieved the objectives of the planned instruction;

1. To monitor learners 'learning and to provide ongoing feedback to both learners and teachers during the teaching-learning process;

2. To identify the learners 'learning difficulties-whether persistent or recurring; and

3. To assign grades.

Teachers help learners to enable them to develop some abilities, skills and attitudes. After teaching, learners' performance needs to be evaluated periodically. Teachers construct the tests to assess the achievement of learners.

Characteristics of Achievement test

- Measure the behavior modification.
- It is a standardized test.
- It developed according to student's difficult level.
- It contains questions in all three domains.
- The teacher can understand the student's achievement through this test.
- It helps to understand the strength and weakness of the student.

Preparing an Achievement Test:

Let us consider the necessary steps in preparing an achievement test:

➢ Planning of the test

➢ Preparation of a blue print

➢ Preparation of test items

➢ Tryout ,preparation of scoring key and evaluation of the test

Step1- Planning of the Test:

The first step for planning of the achievement test is to develop a design or framework. For this, you have to:

A. Analyze the course content into different content units and decide the weight age that is to be given to each in the test;

B. Decide the weightage to be given to different objectives being tested;

C. Decide the weightage to be given to different forms of questions to be used in preparing a question paper;

D. Decide the weightage to be given to time and marks for different forms of questions;

E. Decide the weightage to be given to the difficulty level in the test. Let us

see how we can prepare a good achievement test.

Weightage of the Content: The first part of the planning phase is to decide about the weightage to be given to different units. You can include more units in the annual examinations; but in quarterly or half yearly examinations, fewer units should be included. So, each unit would be given more marks in comparison to the yearly examination. Let us take the example of Mathematics subject for class IX. Let us take an example of a summative assessment with a maximum of 25 marks and the duration

of one hour. It incorporates to the measurement of behaviors in the cognitive domain only. As an illustration, term test we select, two units: Number system and Polynomials from class IX mathematics, which have seven sub units and the question paper will be based on these units. In the present context, the test covered the content of the following units:

1. The Number lines
2. Rational and Irrational Numbers
3. Decimal Expansion of real numbers
4. Operations on Real Number
5. Degree of Polynomials
6. Remainder theorem of Polynomials
7. Factorization of Polynomials

The weightage given to each unit is presented in Table2.

Table2: Weightage given to different units

Content	Marks	Percentage
The Number line	15	60
Polynomials	10	40
Total	25	100

Weightage of Instructional Objectives: After deciding about the weightage to be given to different units, you have to consider the learning objectives. Your test is good only if it is able to evaluate the achievement of learning objectives decided by you. You can allocate appropriate weightage to various objectives like knowledge, understanding, application, skill, etc. For example, for the above case, you may give weightage of 12%, 8%, 24%, 32%, 16% and 8% for knowledge, understanding, application, analysis, synthesis, evaluation respectively. The weightage given to different objectives is presented in Table 3.

Table3: Weightage to instructional objectives

Objectives	Marks	Percentage
Knowledge	3	12
Understanding	2	08
Application	6	24
Analysis	8	32
Synthesis	4	16
Evaluation	2	08
Total	25	100

Weightage given to different forms of questions: The next step is to decide about the weightage to be given to different forms of questions. Generally, in an achievement test, a teacher has to include different types of items (essay, short answer or objectives). The weightage given to different forms of questions is presented in Table 4**.**

Table4:
Weightage given to different forms of questions

Forms of questions	Weightage given
Essay Type	28
Short Answer Type	56
Objective Type	16
Total	**100**

The fourth step in the preparation of question paper is to give weightage to marks and time for different forms of questions. The allotment of marks and time to different forms of questions is presented in Table 5.

Table5
Weightage given to marks for different forms of questions

Form of questions	Marks per question	No. of question	Marks	Percentage
Objective type	0.5	14	07	28
Short answer type	02	7	14	56
Long answer type	4	1	4	16
Total		**22**	**25**	**100**

Estimation of Time: For teacher-made achievement tests, only the experience of teachers should be enough for the estimate of time. You should try to analyze and estimate the time for different types of questions. Here we have taken hypothetically the total duration of 1 hr. For different forms of questions, weightage given to time are presented in Table 6.

Table 6:
Weightage given to time for different form of questions

Form of questions	Time per question(in minutes)	Total no.of questions	Total Times(in minutes)
Objective type	01	14	14
Short answer type	05	07	35
Long answer type	11	1	11
Total		**22**	**60**

The next step is to give weight age to difficulty levels of the items, which is presented in Table 7.

Table7

Weightage to difficulty level of questions

Difficulty Level	Marks	Percentage
Easy	5	20
Average	15	60
Difficult	5	20
Total	**50**	**100**

Step2: Preparation of a Blue Print:

A blueprint is a three-dimensional chart showing different types of items with marks for each topic/unit and each of the objectives. It shows the respective weightage of marks for different objectives, and topics and various types of items as prescribed by the school or in the syllabus or decided by the paper-setter. These specifications have been discussed in the earlier steps of planning of the blue-print.

Based on the above steps the final blue print is developed. With the help of such a table of specifications, you will be able to ensure the needed coverage of units in the syllabus and assessment objectives. The final blueprint is presented in Table 8.

Table8: Blueprint (Table of Specifications)

Objectives / Form of Q Content	Knowledge			Under-standing			Application			Analysis			Synthesis			Evaluation			Grand Total
	O	SA	L	O	SA	L	O	SA	L	O	SA	L	O	SA	L	O	SA	L	
Unit 1	2 (4)			1 (2)			2 (4)	2 (1)				4 (1)		2 (1)			2 (1)		**15**
Unit 2	1 (2)			1 (2)				2 (1)			4 (2)			2 (1)					**10**
Total Marks	3	0	0	2	0	0	2	4	0	0	4	4	0	4	0	0	2	0	**25**
Grand Total	3			2			6			8			4			2			

Note: Figures within the brackets indicate the number of questions and figures outside the brackets indicate marks.

Entries made in this blueprint are only for illustration. You have to decide about these while preparing the blueprint. However, it must confirm, to weightage indicated in the design to the various objectives **(12%, 8%, 24%, 32%,16%, and 8%),** content units

(60% and 40%) and form of questions (**E=16%, S.A. = 56%, O.T. 28%**) as reflected in this table of specification or blueprint.

Step3-Preparation of Test Items/Questions:

Test items from the very basis of testing. A test constructor should have good knowledge of the subject. The test items should be clear, unambiguous and according to the objectives. Different types of items - essay, short-answer and objective types - should be prepared in sufficient numbers. Items of varying difficulty should also be prepared. Experienced teachers are able to estimate difficulty level by their judgment. Some items from question banks can be taken up.

Step4-TryOut, Preparation of Scoring Key and Evaluation of theTest:

After preparation of test items, a review is done on the basis of blueprint requirements to assess the quality of items. It is time to be confirming the validity, reliability and usability of the test. Try out helps us to identify defective and ambiguous items, to determine the difficulty level of the test and to determine the discriminating power of the items. Then only unambiguous and objective based items are retained.

To maintain the objectivity and validity of test, you have to provide proper instructions for marking. Objective type tests have key answers. Their answers and corresponding marks should be given. Short answer questions are also quite specific in nature and possible points or ideas in answers should be mentioned with their corresponding marks. Essay type questions are lengthy and need specificity for uniform marking. Important steps or points of answer should be explicitly mentioned along with their corresponding marks. The above guidelines for marking questions make our testing more reliable. These achievement tests are used normally at the end of term/year as a part of summative assessment. Care should be taken that summative assessment and unit tests have adequate contribution to overall assessment of the learners.

Question wise analysis is given below:

Table 9: Question Wise Analysis

S.N	Content	Objective	Form of Question	Difficulty Level	Marks
Section A					
i	Polynomial	Understanding	MCQ	Average	0.5
ii	Polynomial	Analysis	MCQ	Difficult	0.5
iii	Polynomial	Understanding	MCQ	Average	0.5
iv	Number system	understanding	MCQ	Average	0.5
v	Number system	Knowledge	MCQ	Easy	0.5
vi	Number system	Knowledge	MCQ	Easy	0.5
vii	Number system	Analysis	MCQ	Difficult	0.5
viii	Polynomial	Application	MCQ	Average	0.5
ix	Number system	Application	True/False	Average	0.5

x	Number system	Application	True/False	Average	0.5
xi	Number system	Understanding	True/False	Average	0.5
xii	Number system	Understanding	True/False	Average	0.5
xiii	Number system	Application	True/False	Average	0.5
iv	Number system	Application	True/False	Average	0.5
Section B					
1.	Number system	Evaluation	Short Ans	Difficult	2
2.	Polynomial	Understanding	Short Ans	Average	2
3.	Number system	Analysis	Short Ans	Difficult	2
4.	Polynomial	Knowledge	Short Ans	Easy	2
5.	Polynomial	Analysis	Short Ans	Difficult	2
6.	Polynomial	Understanding	Short Ans	Easy	2
7.	Polynomial	Understanding	Short Ans	Average	2
Section-C					
8.	Number system/Polynomial	Synthesis/application	Long Ans	Average	4

Feedback Devices: Meaning, Types, Criteria, Guidance as Feedback Devices:

Feedback

Feedback is the central function of formative assessment. It typically involves a focus on the detailed content of what is being learnt, rather than simply a test score or other measurement of how far a student is falling short of the expected standard. Nicol and Macfarlane- Dick, synthesizing from the literature, list seven principles of good feedback practice:

1. It clarifies what good performance is (goals,criteria, expected standards);

2. It facilitates the development of self-assessment in learning;

3. It provides high quality information to students about their learning;

4. It encourages teacher and peer dialogue around learning;

5. It encourages positive motivational beliefs and self-esteem;

6. It provides opportunities to close the gap between current and desired performance;

7. It provides information to Teachers that can be used to help shape teaching.

Internal assessment is set and marked by the school (i.e. teachers). Students get the mark and feedback regarding the assessment. External assessment is set by the governing body, and is marked by non-biased personnel. Some external assessments give much more limited feedback in their marking. Providing students with effective feedback contributes to learning and achievement. When teachers provide frequent, constructive and instructive feedback it can bridge the gap between current and desired student outcomes.

If feedback to students is to be effective, it needs to:

- relate specifically to a learning intention/goal and the associated success criteria

- be timely, that is, immediate or soon after action

- reduce the discrepancy between desired and current understanding by answering three major questions:

  - Where am I going? (What are the goals?) - 'feed up'

  - How am I going? (What progress is being made toward the goal?) - feed back'

  - Where to next? (What activities need to be undertaken to make better progress?) - 'feed up'.

- support students to monitor their own progress and achievements.

Types of feedback

Feedback can take many forms such as oral, written, informal, formal, descriptive, evaluative, peer and self-assessed feedback. It is the quality of feedback that counts. Students and parents need to be made aware of the different forms of feedback, and that comments or oral feedback, can be just as impactful and important as marks. Chappuis (2012), describes 3 conditions, regardless of the form of feedback, that needs to be in place before offering feedback:

- students need a clear vision of the intended learning

- instructional activities need to align directly with the intended learning and students need to see that connection

- Assessments need to be set up so that students can interpret the results as indicators of what they have or have not yet learned.

Feedback can take many forms, some are more effective than others, some are equally as effective as others and some overlap with each other.

Oral feedback

Oral feedback is usually given during a lesson while written feedback tends to be given after a task.
Oral feedback is sometimes underestimated because it is less formal, but it can be a very powerful and effective tool as it can be provided easily in the 'teachable moment' and in a timely way.

Written feedback

- Effective written feedback provides students with a record of what they are doing well, what needs improvement and suggested next steps.

- Effective written feedback also needs to be timely, written in a manner that is understandable to the student and actionable so that the student can make revisions.

- Written feedback needs to include information about where the student has met the learning intentions and/or success criteria and where improvement is still required.

When to give feedback?

Ideally, feedback takes place during the learning as students work on a task. Or it can be offered as soon as possible after the task, allowing time for improvements to be made.

Feedback during learning allows students to take feedback on board immediately and to try to realize improvement during the learning process. This is often more effective and productive to the learning experience than end-of task feedback measures (usually summative) which require students to remember the feedback and apply the recommended strategies to a future task.

Too often feedback that is provided to students after learning has concluded is not used by the students to improve their work. This often results in teachers making the same comments

over and over again, and wondering why the student has not transferred the information to another context.

For such feedback to influence subsequent learning, students must remember it, translate it into advice that is transferable across tasks, and apply it the next time they encounter a task in which this learning could apply.

Evaluative   and Descriptive feedback

Feedback can also be either evaluative, involving a value judgment, or descriptive, providing guidance for improvement.

Evaluative feedback, in the form of grades or brief general comments, for example 'well done', provides some information about learning, but does not convey the information and guidance that students can use to improve.

In attempting to create a positive climate for learning, many teachers increase the level of praise they give during feedback sessions. Research shows, however, that praise needs to be realistic if the feedback is to be meaningful. To be really effective, praise needs to confirm a child's own sense of reality. The impact of feedback on learning achievement has been found to be low when it is focused on praise, rewards and punishment.

Descriptive feedback provides students with detailed, specific information about improving their learning.So this means descriptive feedback is linked to the learning that is expected, addresses faulty interpretations and lack of understanding and provides students with visible and manageable 'next steps'. These 'next steps' are based on an assessment of the work at hand and an image of what 'good work looks like' so that they can begin to take on the responsibility of self-assessing and self-correcting.

An example of descriptive feedback is: 'That's a good introduction because you have covered the main points we discussed at the beginning. Now … which points do you think you should expand on?'

Informal and Formal Feedback

Teachers can meet with a few students per day or per week depending on specific projects, deadlines and individual student needs. It is important to plan these conferences in a structured way with a focus on individualized goals so both teacher and student make good use of their time.

When preparing and holding student-teacher conferences, remember the following:

- look at student work beforehand

- use a checklist or feedback form that students can use as a reference for making revisions

- focus on 2 or 3 items that need work and show how to improve them

- make time for the student to ask questions and give input.

When teachers use formal conferencing along with informal feedback, students are better protected from failure, and are set up for success.

Informal check-ins can be used to see how students are progressing and usually occur during the learning. 'Check ins' are considered informal and are vitally important to providing effective feedback. They:

- occur when the teacher visits students as they are engaged in a task to make sure they are on the right track

- Can quickly and effectively steer students in the right direction and enhance learning.

Formal feedback is often written or a combination of oral and written, and usually occurs at the end of a task. It can be provided through structured conferences with specific goals.

Peer and Self Feedback

Peer feedback occurs when students offer each other advice and suggestions in relation to each other's work. Self-feedback must be taught explicitly to ensure students have the skills to apply this to their own work.

One way to facilitate peer feedback is through the use of structured peer conferences. This provides students with the opportunity to give and receive feedback about ongoing work and a positive aspect is that students get to see other students' work which can also deepen understanding of the learning goals.

Once students have had time to practice, know what the requirements are, and are aware of expectations, peer conferences can be an integral part of the feedback process.

As with teacher feedback, peers can offer suggestions and comments on:

- what has been done well in relation to the learning intention/ success criteria

- what still needs to be done in order to achieve the learning intention/ success criteria

- how to achieve that improvement.

However, left to their own devices to give feedback, many students will use the time to chat, criticise the other students' work or get nothing done. To counteract this teacher need to:

- model and role-play how to give feedback in a constructive way

- explicitly teach students how to provide effective feedback to each other

- hold students accountable for the comments, suggestions and feedback they give one another

- use scaffolds like peer feedback forms, which can be checked by the teacher to provide more structure to peer conferences.

Self-feedback is the ultimate goal of feedback for learning. Teachers can help students to become more independent through explicit modelling and instruction, and teaching the skills of self-assessment and goal setting.

To help students reach autonomy teachers can:

- explicitly identify, share and clarify learning goals and success criteria

- model the application of criteria using samples

- provide guided opportunities for self-feedback

- teach students how to use feedback to determine the next steps and set goals

- allow time for self-feedback/reflection.

Portfolios

A student portfolio is a compilation of academic work and other forms of educational evidence assembled for the purpose of (1) evaluating coursework quality, learning progress, and academic achievement; (2) determining whether students have met learning standards or other academic requirements for courses, grade-level promotion, and graduation; (3) helping students reflect on their academic goals and progress as learners; and (4) creating a lasting archive of academic work products, accomplishments, and other documentation. Advocates of student portfolios argue that compiling, reviewing, and evaluating student work over time can provide a richer, deeper, and more accurate picture of what students have learned and are able to do than more traditional measures—such as standardized tests, quizzes, or final exams—that only measure what students know at a specific point in time.

Portfolios come in many forms, from notebooks filled with documents, notes, and graphics to online digital archives and student-created websites, and they may be used at the elementary, middle, and high school levels. Portfolios can be a physical collection of student work that includes materials such as written assignments, journal entries, completed tests, artwork, lab reports, physical projects (such as dioramas or models), and other material evidence of learning progress and academic accomplishment, including awards, honors, certifications, recommendations, written evaluations by teachers or peers, and self-reflections written by students.

Portfolios may also be digital archives, presentations, blogs, or websites that feature the same materials as physical portfolios, but that may also include content such as student-created videos, multimedia presentations, spread sheets, websites, photographs, or other digital artefacts of learning.

Online portfolios are often called digital portfolios or e-portfolios, among other terms. In some cases, blogs or online journals may be maintained by students and include ongoing reflections about learning activities, progress, and accomplishments. Portfolios may also be

presented—publicly or privately—to parents, teachers, and community members as part of a demonstration of learning, exhibition, or capstone project.

It's important to note that there are many different types of portfolios in education, and each form has its own purpose. For example, "capstone" portfolios would feature student work completed as part of long-term projects or final assessments typically undertaken at the culmination of a middle school or high school, or at the end of a long-term, possibly multiyear project. Some portfolios are only intended to evaluate learning progress and achievement in a specific course, while others are maintained for the entire time a student is enrolled in a school. And some portfolios are used to assess learning in a specific subject area, while others evaluate the acquisition of skills that students can apply in all subject areas.

The following arguments are often made by educators who advocate for the use of portfolios in the

Classroom: Student portfolios are most effective when they are used to evaluate student learning progress and achievement. When portfolios are used to document and evaluate the knowledge, skills, and work habits students acquire in school, teachers can use them to adapt instructional strategies when evidence shows that students either are or are not learning what they were taught. Advocates typically contend that portfolios should be integrated into and inform the instructional process, and students should incrementally build out portfolios on an ongoing basis—i.e., portfolios should not merely be an idle archive of work products that's only reviewed at the end of a course or school year. Portfolios can help teachers monitor and evaluate learning progress over time. Tests and quizzes give teachers information about what students know at a particular point in time, but portfolios can document how students have grown, matured, and improved as learners over the course of a project, school year, or multiple years. For this reason, some educators argue that portfolios should not just be compilations of a student's best work, but rather they should include evidence and work products that demonstrate how students improved over time. For example, multiple versions of an essay can show how students revised and improved their work based on feedback from the teachers or their peers. Portfolios help teachers determine whether students can apply what they have learned to new problems and different subject areas. A test can help teachers determine, for example, whether students have learned a specific mathematical skill. But can those students also apply that skill to a complex problem in economics, geography, civics, or history? Can they use it to conduct a statistical analysis of a large data set in a spread sheet?

Or can they use it to develop a better plan for a hypothetical business. (Educators may call this ability to apply skills and knowledge to novel problems and different domains "transfer of learning"). Similarly, portfolios can also be used to evaluate student work and learning in non-school contexts.

For example, if a student participated in an internship or completed a project under the guidance of an expert mentor from the community, students could create portfolios over the course of these learning activities and submit them to their teachers or school as evidence they have met certain learning expectations or graduation requirements. Portfolios can encourage students to take more ownership and responsibility over the learning process. In some schools, portfolios are a way for students to critique and evaluate their own work and academic progress, often during the process of deciding what will be included in their portfolios. Because portfolios document learning growth over time, they can help students reflect on where they started a course, how they developed, and where they ended up at the conclusion of the school year. When reviewing a portfolio, teachers may also ask students to articulate the connection between particular work products and the academic expectations and goals for a course. For these reasons, advocates of portfolios often recommend that students be involved in determining what goes into a portfolio, and that teachers should not unilaterally make the decisions without involving students. For related discussions, see student engagement and student voice. Portfolios can improve communication between teachers and parents.

Portfolios can also help parents become more informed about the education and learning progress of their children, what is being taught in a particular course, and what students are doing and learning in the classroom. Advocates may also contend that when parents are more informed about and engaged in their child's education, they can play a more active role in supporting their children at home, which could have a beneficial effect on academic achievement and long term student outcomes.

REFLECTIVE JOURNAL

A reflective journal is a means of recording ideas, personal thoughts and experiences, as well as reflections and insights a student have in the learning process of a course. In addition to the demands of a typical written assignment (e.g. able to give definition on concepts, demonstrate basic understanding of course materials), reflective journal requires the students to think

more deeply, to challenge their old ideas with new incoming information, to synthesize the course materials they have learnt into their personal thoughts and philosophy, and also to integrate it into their daily experiences and future actions. The benefits of the reflective learning process are usually accumulated over a period of time, in which the students usually show a series of developmental changes, personal growth and changes in perspectives during the process.

ADVANTAGES OF REFLECTIVE JOURNAL

Active learning - The process of reflection encourages the students to take the initiative to be active, self-driven; allows individual learner to explore concepts and ideas in relation to their thoughts and feelings from different perspectives. Students can become independent thinkers through the practice and to enable themselves to solve various problems on their own.

Understanding the progress of students - Reflective journals provide good opportunities for teachers to gain better understanding about how the students think and feel about the course, and the learning progress of the students throughout the course, which will eventually enhance the students' learning process.

Improving writing skills - Writing reflective journals can involve students in a new form of writing which they may not have a chance to experience in the past. This exposure can bring out improvement in students' writing skills.

Freely expressing personal views and criticizing of one-self - Reflective journal assignments provide the platform for students to freely express what they think and feel about the course and their learning process, and also promote their expression of ideas, personal experiences and opinions. This is an ideal place for students who are generally not willing to speak up in the classes and tutorials to express themselves.

Enhance critical thinking and creativity - The process of self-reflection enhances the development of critical thinking skills among students when they relate their knowledge to real world issues. It can help students develop their creativity and a questioning attitude towards different issues and problems.

ASSESSING REFLECTIVE JOURNAL AND STUDENT PORTFOLIOS

Assessment of the reflective diaries

- The assessment of the diaries was based on the quality of the evidence presented in the

- selected items in relation to the three objectives of the module, and in particular the reflection on current assessment practice based on theories.

- To explore the students' perceptions and views on this new assessment approach, students were randomly selected for interviews after the assessment.

- During the interviews, students were invited to talk about their views on the portfolio assessment approach, their experience in preparing the portfolios, and their perceptions of the effects of portfolio assessment on their learning.

How to design a good Reflective Journal Assessment?

- Consider the types of reflective journals that fit your course (if students are inexperienced with reflective journals, the structured form would be more 'student-friendly' because specific questions and guidelines are available)

- Make sure there are clear ideas about expectations and assessment criteria given to the students. (e.g. What can students put in their journals? What is the definition of 'reflection'? What is the approximate length for each journal entry?)

- Try to make students understand the purpose and benefits of reflective journals at the very beginning Make sure that teachers have explained and discussed the policies concerning privacy and confidentiality of information with students

- Decide the regularity of journal entry (e.g. weekly, monthly)

- Provide timely feedback to students

WHAT IS PORTFOLIO ASSESSMENT?

Portfolio assessment is an assessment form that learners do together with their teachers, and is an alternative to the classic classroom test. The portfolio contains samples of the learner's work and shows growth over time. An important keyword is reflection: By reflection on their own work, learners begin to identify the strengths and weaknesses of their own work (self-assessment). The weaknesses then become improvement goals. In portfolio assessment it is the quality that counts, not the quantity. Another keyword is learning objectives. Each portfolio entry needs to be assessed with reference to its specific learning objectives or goals.

Different schools may create different forms of portfolios. Some schools create portfolios that are a representative sample of the learners' work, while other schools use the

portfolios as an assessment tool that can be an alternative to classical classroom tests and standardized teacher evaluation.

PORTFOLIO ASSESSMENT

Field Engagement using Rubrics

What is a rubric?

A rubric is an assessment tool that clearly indicates achievement criteria across all the components of any kind of student work, from written to oral to visual. It can be used for marking assignments, class participation, or overall grades. There are two types of rubrics: holistic and analytical.

How to make a rubric

Criteria. Decide what criteria or essential elements must be present in the student'swork to ensure that it is high in quality. At this stage, you might even consider selecting samples of exemplary student work that can be shown to students when setting assignments.

Levels: decide how many levels of achievement you will include on the rubric and grading scheme.

Description: for each criterion, component, or essential element of quality, describe in detail what the performance at each achievement level looks like.

Additional comments: Leave space for additional, tailored comments or overall impressions and a final grade.

How to use rubrics effectively

- Develop a different rubric for each assignment

- Be transparent

- Integrate rubrics into assignments

- Leverage rubrics to manage your time

- Include any additional specific or overall comments that do not fit within the rubric's criteria.

Why use rubrics?

Rubrics help instructors:

- Assess assignments consistently from student-to-student.

- Save time in grading, both short-term and long-term.

- Give timely, effective feedback and promote student learning in a sustainable way.

- Clarify expectations and components of an assignment for both students and course teaching assistants (TAs).

- Refine teaching methods by evaluating rubric results.

Rubrics help students:

- Understand expectations and components of an assignment.

- Become more aware of their learning process and progress.

- Improve work through timely and detailed feedback.

Considerations for using rubrics

When developing rubrics consider the following:

- Although it takes time to build a rubric, time will be saved in the long run as grading and providing feedback on student work will become more streamlined.

- A rubric can be a fillable pdf that can easily be emailed to students.

- Rubrics are most often used to grade written assignments, but they have many other uses:
    - They can be used for oral presentations.
    - They are a great tool to evaluate teamwork and individual contribution to group tasks.
    - Rubrics facilitate peer-review by setting evaluation standards. Have students use the rubric to provide peer assessment on various drafts.
    - Students can use them for self-assessment to improve personal performance and learning. Encourage students to use the rubrics to assess their own work.
    - Motivate students to improve their work by using rubric feedback to resubmit their work incorporating the feedback.

Getting Started with Rubrics

- Start small by creating one rubric for one assignment in a semester.

- Ask colleagues if they have developed rubrics for similar assignments or adapt rubrics that are available online. For example, the AACU has rubrics for topics such as written and oral communication, critical thinking, and creative thinking. RubiStar helps you to develop your rubric based on templates.

- Examine an assignment for your course. Outline the elements or critical attributes to be evaluated (these attributes must be objectively measurable).

- Create an evaluative range for performance quality under each element; for instance, "excellent," "good," "unsatisfactory."

- Add descriptors that qualify each level of performance:

  o Avoid using subjective or vague criteria such as "interesting" or "creative." Instead, outline objective indicators that would fall under these categories.

  o The criteria must clearly differentiate one performance level from another.

  o Assign a numerical scale to each level.

- Give a draft of the rubric to your colleagues and/or TAs for feedback.

- Train students to use your rubric and solicit feedback. This will help you judge whether the rubric is clear to them and will identify any weaknesses.

- Rework the rubric based on the feedback.