

Assessment Reforms, Issues & Challenges

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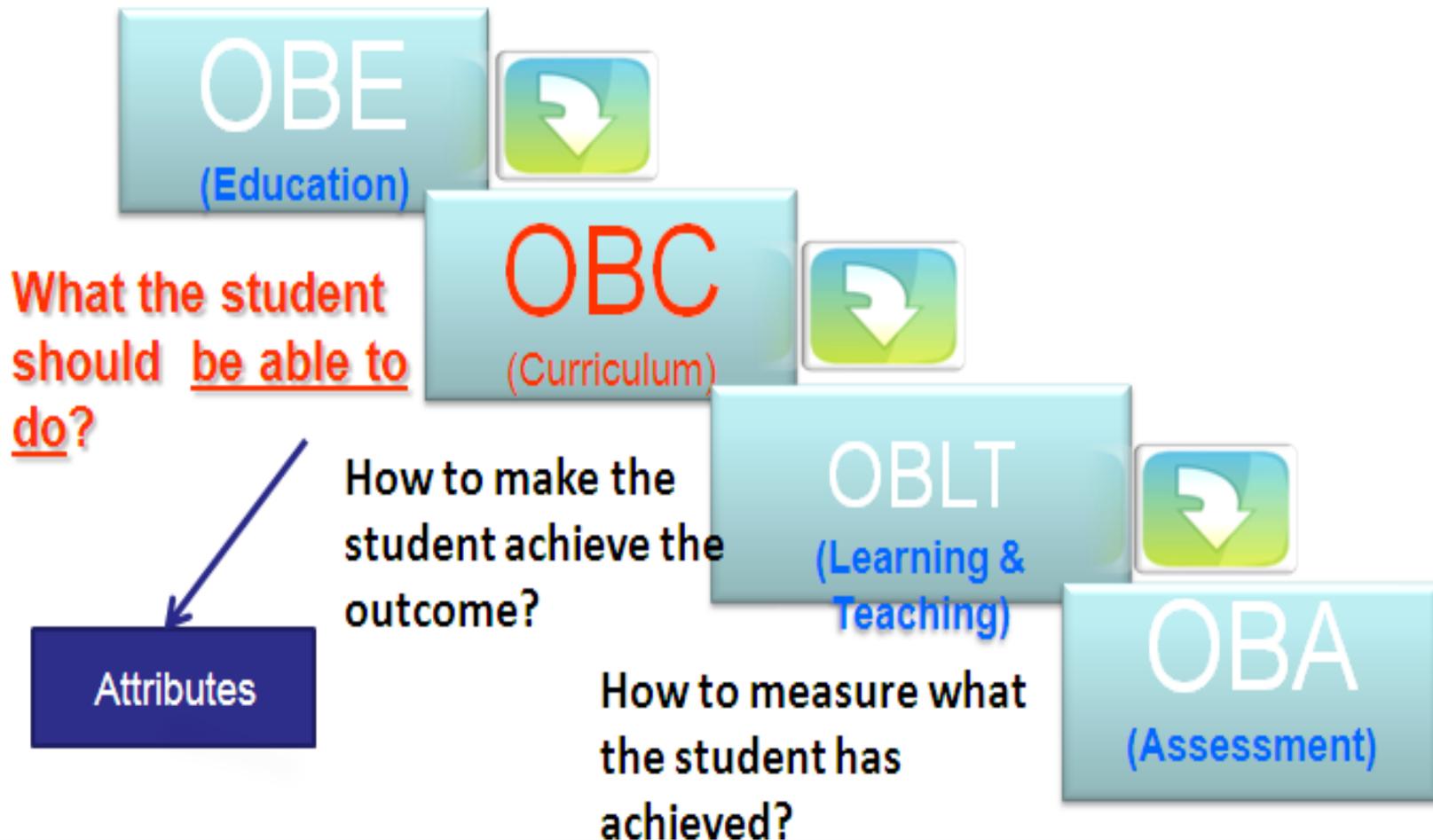
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Assessment

In OBE, Assessment is an ongoing process of students' learning and their needs, rather than an occasional event in the programme. Frequent observation of students, followed by continuous feedback along with an understanding of Students learn, allow teachers to make valid decisions and judgments to ensure the achievement of outcomes at different levels in three domains of learning.

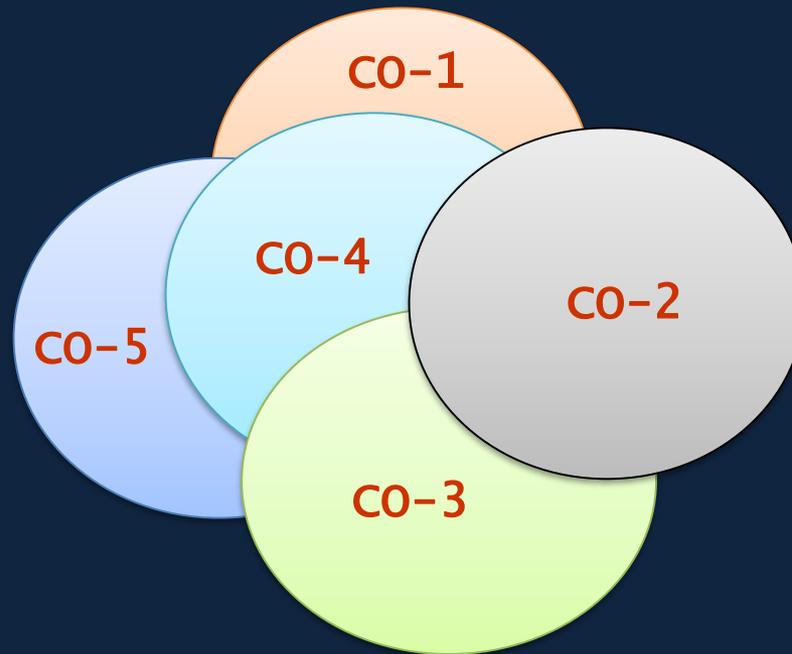
Outcome Based Education



Assumptions Before Assessment

- Teachers need to **comprehend the POs, COs and SOs.**
- In a course if a task is to be performed all the domains would be involved in that, but there may be focus on one domain only depending on the type of activity to be performed.
- Similarly there is no compartmentalization amongst the outcomes at different levels.
Outcomes may be integrated and overlapping with each other in a task.

Integration and Overlapping of Outcomes





What is to be Assessed ?

Programme Level – POs (12/7), PSOs

Course Level – COs (~200/~150)

Session Level – **SOs** (Depending on the Course Outcomes)
(During T-L Process in Laboratory/
Workshop/Field/any other location)

POs of Diploma Programme

- 1. Basic and Discipline Specific Knowledge:** Apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the engineering problems.
- 2. Problem Analysis:** Identify and analyse well-defined engineering problems using codified standard methods.
- 3. Design/Development of Solutions:** Design solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs.
- 4. Engineering Tools, Experimentation and Testing:** Apply modern engineering tools and appropriate technique to conduct standard tests and measurements.

POs of Diploma Programme

5. **Engineering Practices for Society, Sustainability and Environment:** Apply appropriate technology in context of society, sustainability, environment and ethical practices.
6. **Project Management:** Use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities.
7. **Life-long Learning:** Ability to analyse individual needs and engage in updating in the context of technological changes.

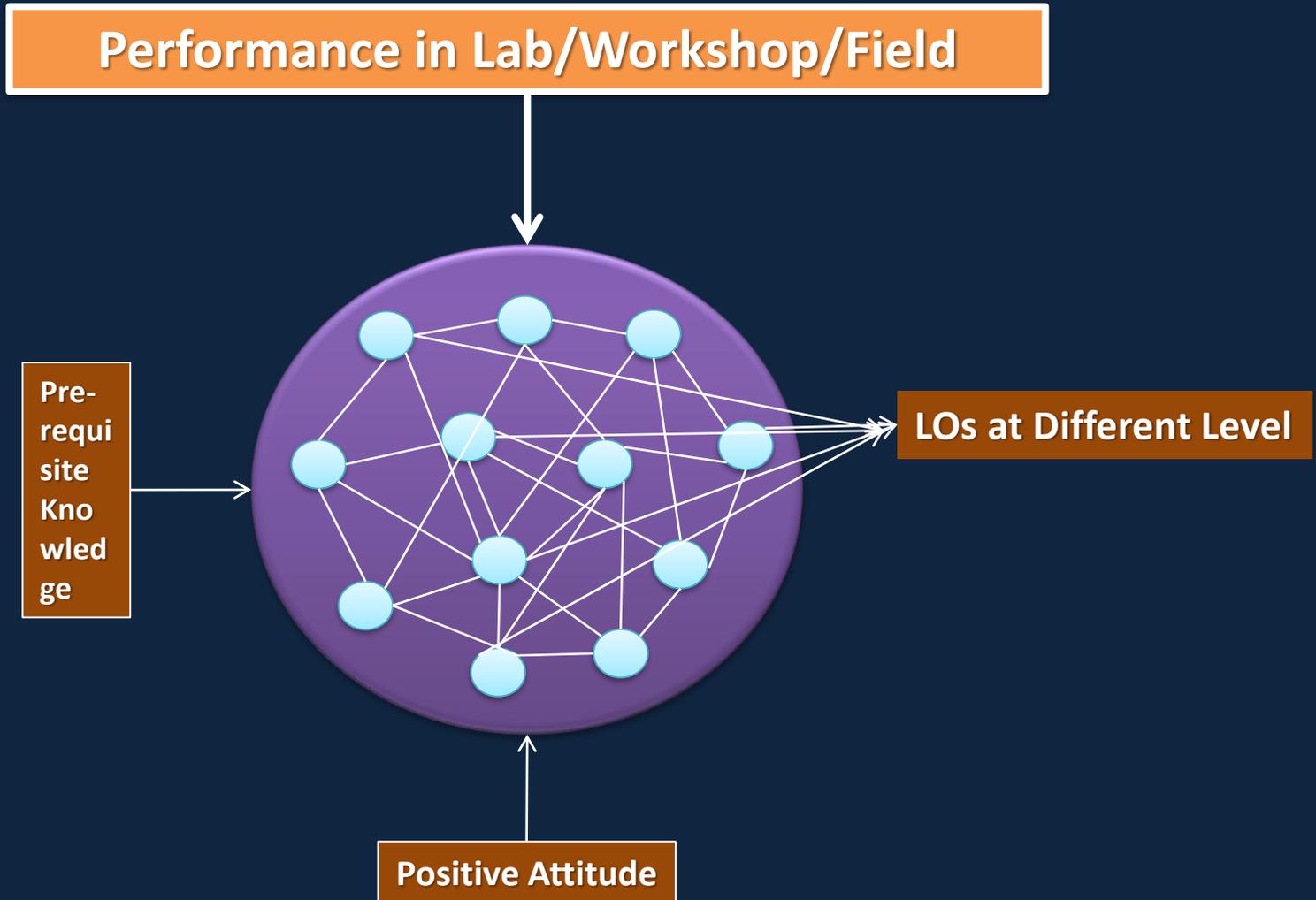
Assessment of Course Outcomes

| | | |
|--------------------------------------|---|------------------------------|
| Course Code | : | |
| Course Title | : | Mechanical Workshop Practice |
| Pre- requisite Course Code and Title | : | |
| Rationale | : | |

Course Outcomes:

- CO-1 Use measuring devices and hand tools effectively.**
- CO-2 Undertake wood working operations economically and safely.**
- CO-3 Perform various joining operations using welding, brazing and soldering methods.**
- CO-4 Perform different types of fitting and sheet metal operations.**
- CO-5 Prepare simple jobs using lathe.**

What is to be Assessed ?

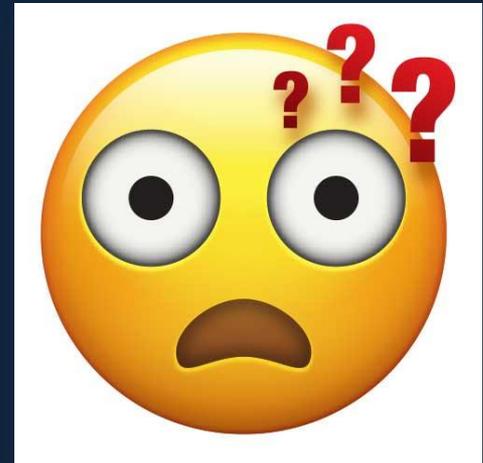


Assessment of Outcomes

POs & PSOs

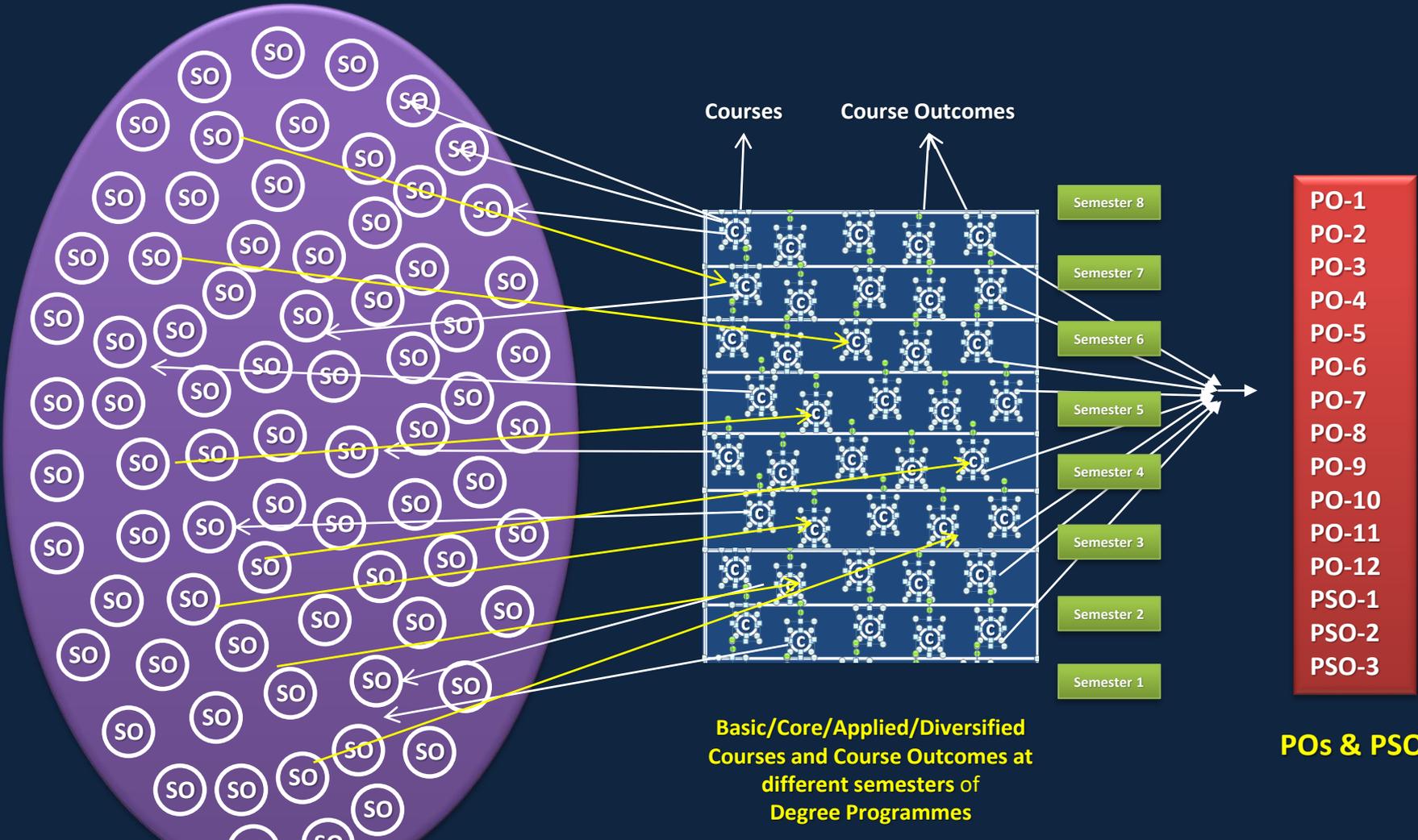


COs



SOs

Assessment of SOs, COs and POs & PSOs



Design & Development of Curriculum

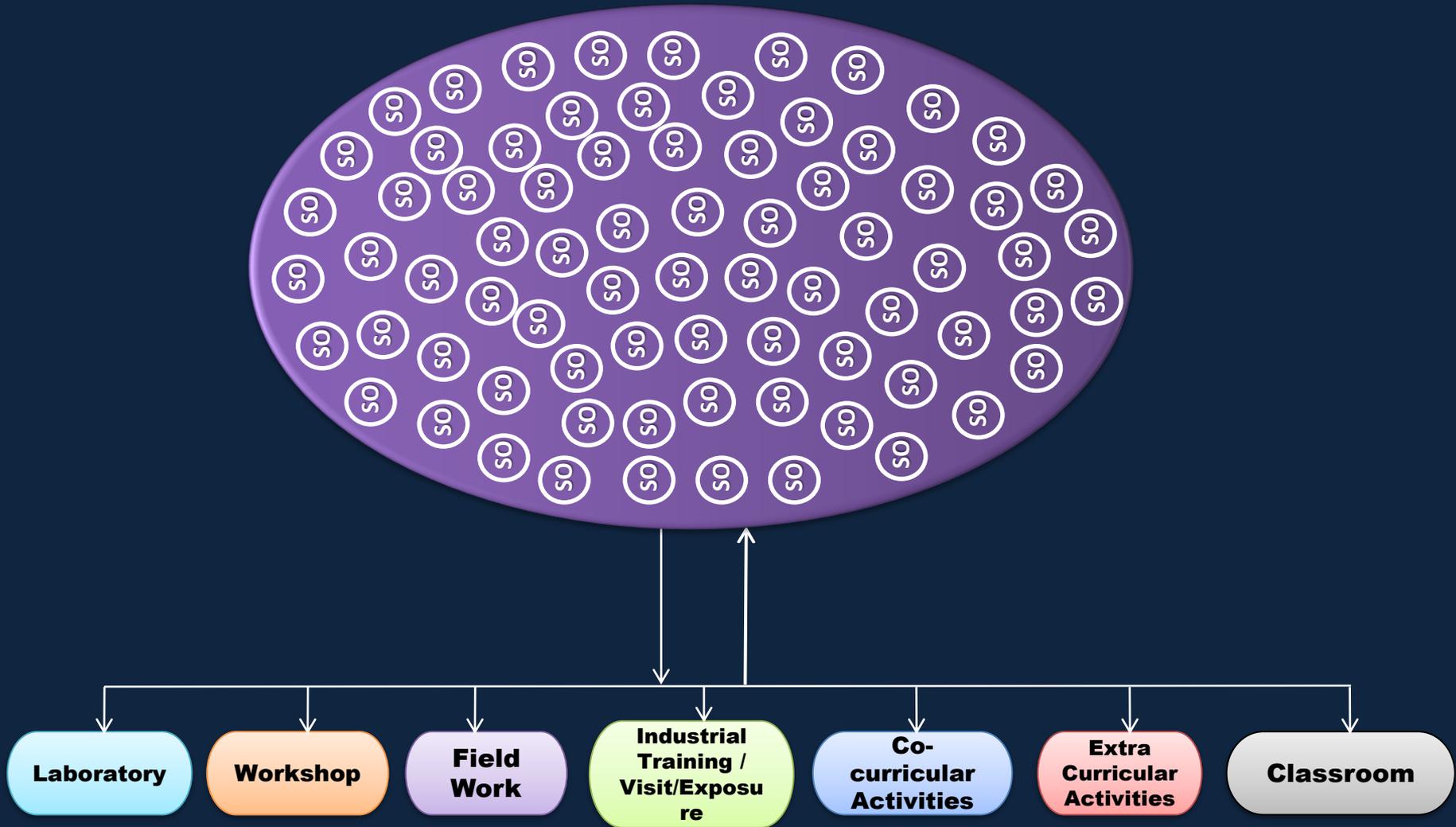
Session Outcomes



Where to Assess ?

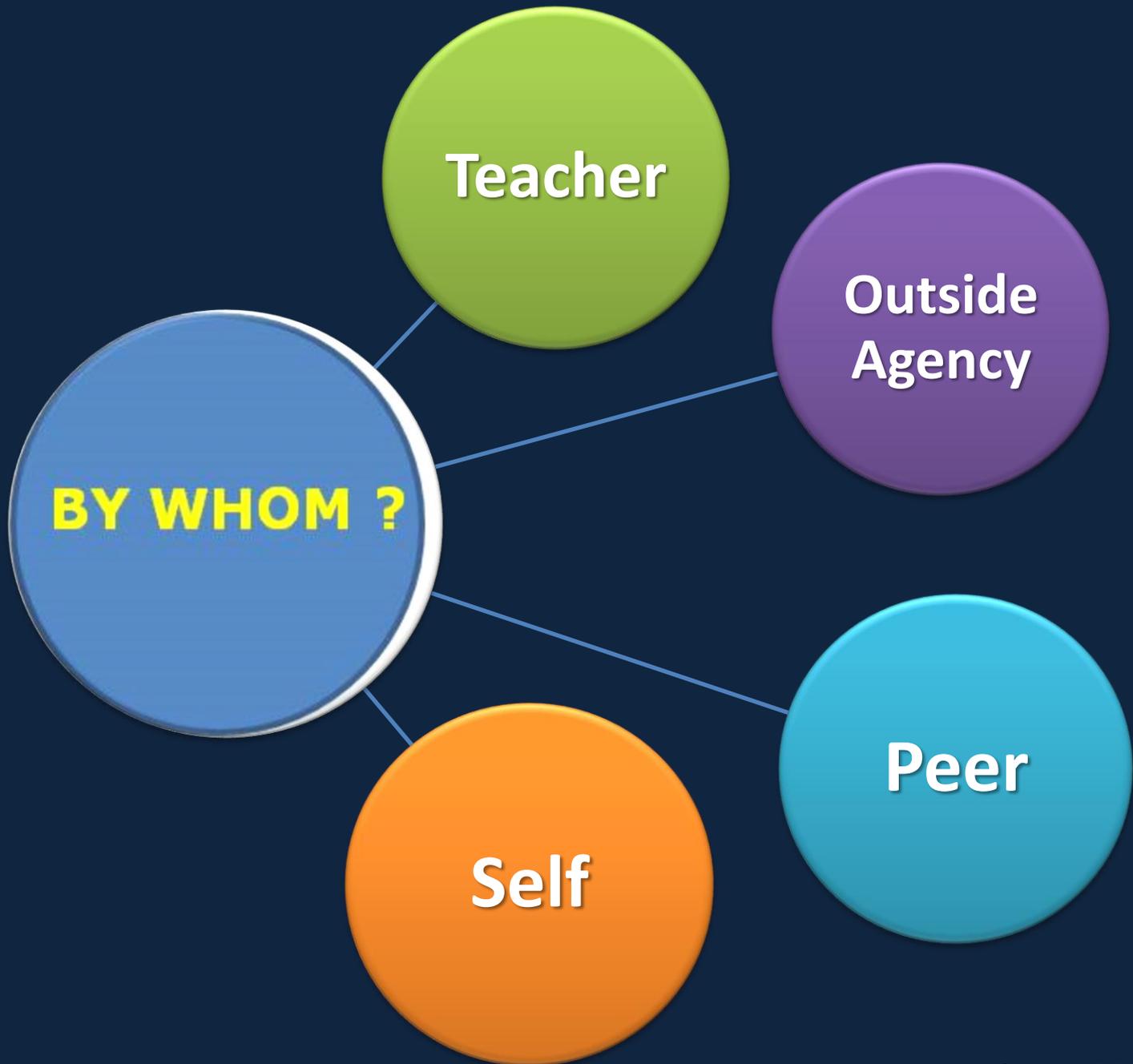
- **Classroom**
- **Laboratory**
- **Workshop**
- **Worksites**
- **Field**
- **During co-curricular activities**
- **During extra curricular activities**
- **Any other location**

Implementation and Assessment of Session Outcomes



When to Assess ?

- In the beginning
- During the Programme
- At the End



How to Assess ?

Direct and Indirect Tools of Assessment

Formative Assessment

(Progressive/ Continuous)

- Assessment **during the formative stage of learning.**
- During formative assessment, **continuous feedback** is provided to the students to improve the learning process, hence also termed as continuous or progressive assessment.
- Helps to **improve the efficiency and effectiveness of learning process.**
- Usually carried for small chunks of learning outcomes of the course curriculum.
- Percentage weight age of formative assessment should be appropriately marked as per the need of the course, in scheme of assessment in outcome based curriculum to ensure development of outcomes.

Scheme of Assessment:

| Course Titles | Scheme of Assessment (Marks) | | | | | | | | | | | Total Marks (PA+ESA) |
|--|------------------------------|----------------------------|-------------|-----------|-------------|---------------------|------------------|----------------------------|-------------------------------|----------------------------|----------------------|-------------------------|
| | Progressive Assessment (PA) | | | | | | | | End Semester Assessment (ESA) | | | |
| | Classroom Assessment (CA) | Laboratory Assessment (LA) | | | | Sessional work (SW) | Attendance (ATT) | Total PA (CA+LA+SW+ATT) | Classroom Assessment (CA) | Laboratory Assessment (LA) | Total ESA (CA+LA) | |
| | | Class Test (CT) | Performance | | Viva - Voce | | | | | | | |
| PRA | PDA | | | | | | | | | | | |
| Communication Skills (English) | 20 | 25 | 20 | 05 | 50 | 20 | 10 | 100 | 70 | 30 | 100 | 200 |
| Fundamentals of Engineering Mathematics | 50 | - | - | - | | 20 | 10 | 80 | 70 | - | 70 | 150 |
| Engineering Chemistry (Group-2) | 20 | 25 | 20 | 05 | 50 | 20 | 10 | 100 | 70 | 30 | 100 | 200 |
| Computer Fundamentals & Applications | - | 25 | 20 | 05 | 50 | 15 | 10 | 75 | 25* | 50 | 75 | 150 |
| Mechanical Workshop Practice | - | 25 | 20 | 05 | 50 | 15 | 10 | 75 | 25* | 50 | 75 | 150 |
| Basic Electrical & Electronics Engineering | 20 | 25 | 20 | 05 | 50 | 20 | 10 | 100 | 70 | 30 | 100 | 200 |
| TOTAL | 110 | 125 | 100 | 25 | 250 | 110 | 60 | 530 | 330 | 190 | 520 | 1050 |

Legend : PRA : Process Assessment, PDA : Product Assessment.

* Online Exam/objective type exam (Multiple choice type) will be conducted.

Note: i. Separate passing is must for Progressive and End Semester Assessment.

ii. Separate passing is must for Classroom Assessment (Theory) and Laboratory Assessment (Practical).

Assessment for Learning

- Assessment is done to ensure learning.
- Uses the concept of formative assessment.
- Enables teachers to use information about students' knowledge, understanding and skills to inform their teaching
- Teachers **provide feedback** to students about their learning **and how to improve.**
- Assess student's progress and learning needs
- Teacher and student work together to **improve student's learning.**
- Continuous Process
- Increase learner's motivation

**“Learners
need endless
feedback more
than they
need endless
teaching.”**

-Grant Wiggins, *Less Teaching and More Feedback?*,
ASCD Inservice,

Summative Assessment

(End of Term Assessment)

- Assessment is done on the completion of the course or semester to **sum up the entire learning**.
- One time assessment of six months or yearly course is done in 3 hours for both practical and theory.
- **Does not give the true picture** of students performance.
- Purpose of summative assessment is to **award marks/grades or certificates**.

Assessment of Learning

- Assessment is done at the end for the purpose of certification.
- Uses the concept of summative assessment.
- Assists teachers to **use evidence of student learning to assess** student achievement against learning goals and standards.
- Student's **are not directly involved** in the assessment process.
- Teachers certify student's performance.
- May increase or decrease learner's motivation
- **Promotes Marking, Grading, Ranking, Certification of Students**
- Less emphasis on improving student's learning

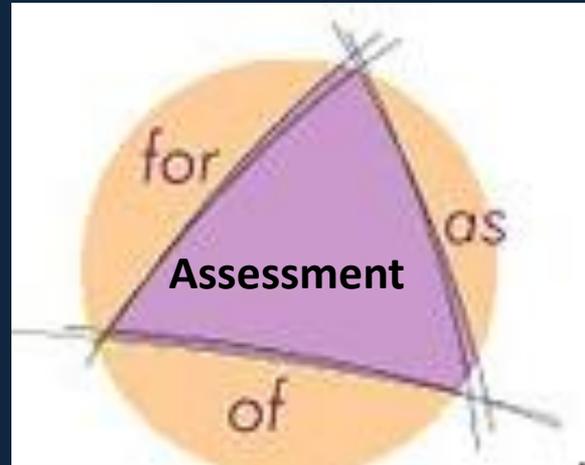
Assessment as Learning

(Self Assessment)

- Students involved in the learning process, **monitor their own progress**, ask questions and practice skills.
- Students use self-assessment and teacher feedback to **reflect on their own learning**, consolidate their understanding and work towards learning goals.
- Teachers guide students in setting learning goals and provide student's with opportunities to practice **Self-monitoring**, **Self-reflection** and **Self assessment**.
- Improve student's learning and motivation

Assessment FOR Learning

Occurs when teachers use inferences about student progress to inform their teaching.



Assessment AS Learning

Occurs when students reflect on and monitor their process to inform their future learning goals

Assessment OF Learning

Occurs when teachers use evidence of student learning to make judgments on student achievement against goals and standards.

Process Assessment

- Assessment **during performance** by students, generally in laboratories, workshops and other locations.
- Process assessment is **done in real time** in presence of students only.
- **Check list or criteria need to be identified for process assessment to enhance validity and reliability.**

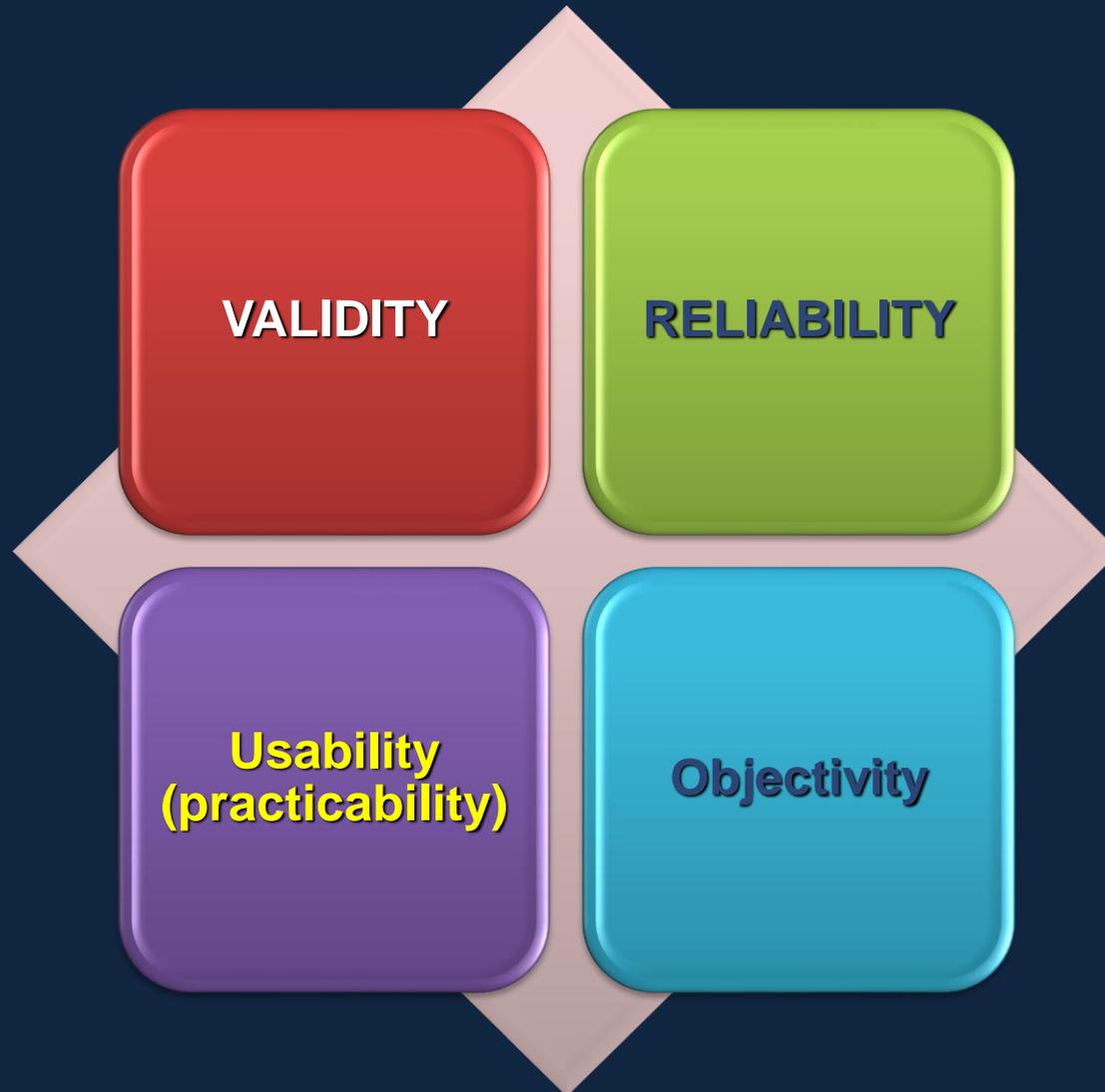
Product Assessment

- Assessment after the **completion of an activity/process/ experiment.**
- Product assessment need not to be done in real time hence **can be done in absence of students.**
- **Check list or criteria need to be identified for product assessment to enhance validity and reliability.**

OBE and CRT

In OBE & C, the focus is on **Criterion-referenced Tests (CRT)**, which measures students' performance against a fixed set of predetermined criteria or learning standards.

Characteristics of Good Assessment System



Validity

- Extent to which an assessment procedure does what it is intended to do.
- Assessment is valid when we assess students on desired learning outcomes.
- Validity is precondition for objectivity.

Ensuring Validity

- To **ensure validity** in examination question paper, **specification table** is prepared.
- Specification table is a **tool to provide representative sample of curriculum** in question paper to ensure content validity.
- For ensuring validity, provide **model answers** for designed questions.

Example : Validity

- For valid assessment of project work of the students, we need to assess outcomes, expected from project work like **innovativeness, initiative, originality** and so on, rather than assessment of only trivial criteria like finishing of **the product, theory, presentation skills** etc. If we are doing so, then assessment **will be invalid**.

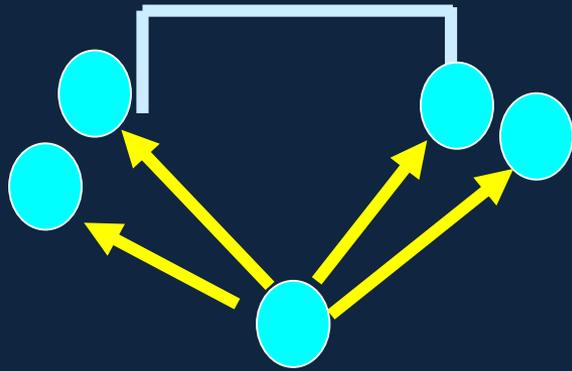
Reliability

- **Consistency of Measurement** i.e. the consistency with which an evaluation instrument measures, whatever it has to measure.
- **Example** : If an answer paper is valued/scored again and again, even at different intervals, the score do not change every time then the test is said to be reliable test.

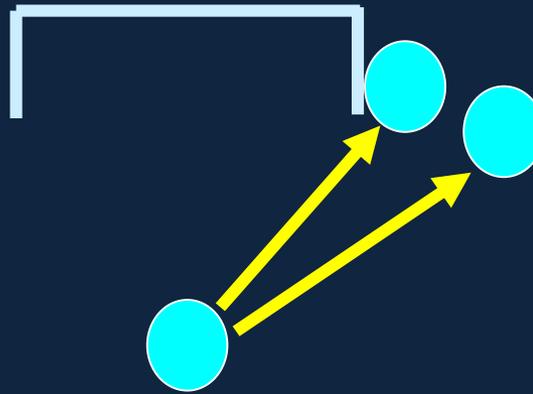
Ensuring Reliability

- **Design of different types of specific questions.**
- **Specificity and objectivity need to be enhanced.**

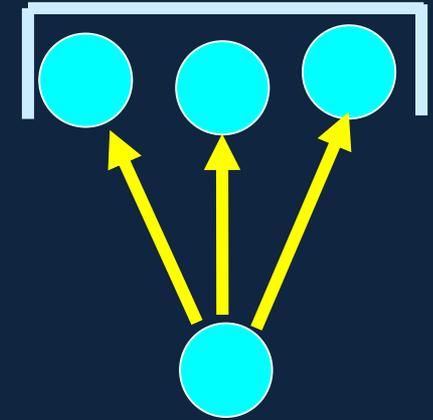
Example : Validity and Reliability



- NOT RELIABLE
- NOT VALID



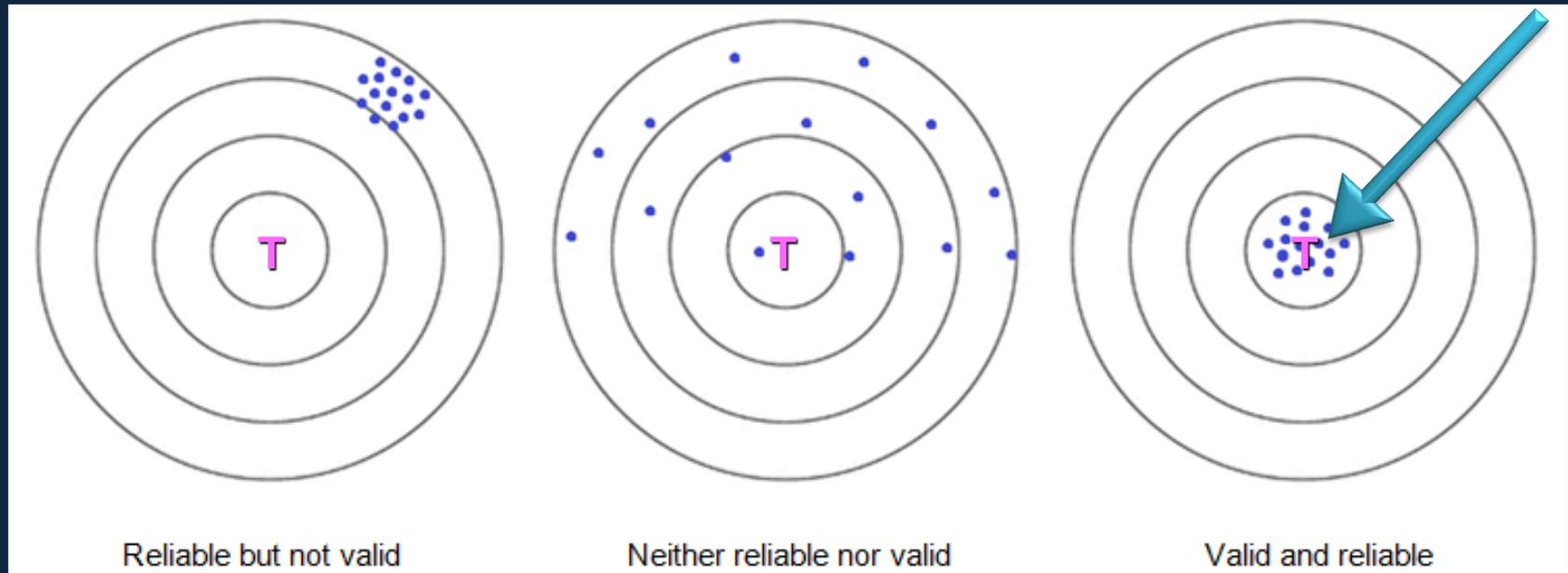
- RELIABLE
- NOT VALID



- RELIABLE
- VALID

Purpose : To hit a ball inside Goal Post

Example : Validity and Reliability



Shooters targeting the point T

Reliability (Consistency) of measurement is needed to obtain valid results but we can have reliability even without validity.

Objectivity

- The question should be very **specific**, to the point, without any ambiguity.
- **Subjectivity** should be **reduced**.
- **Personal biases and preferences** should not be there.
- The evaluation should be **independent of who is evaluating and who is being evaluated**.

Enhancing Objectivity

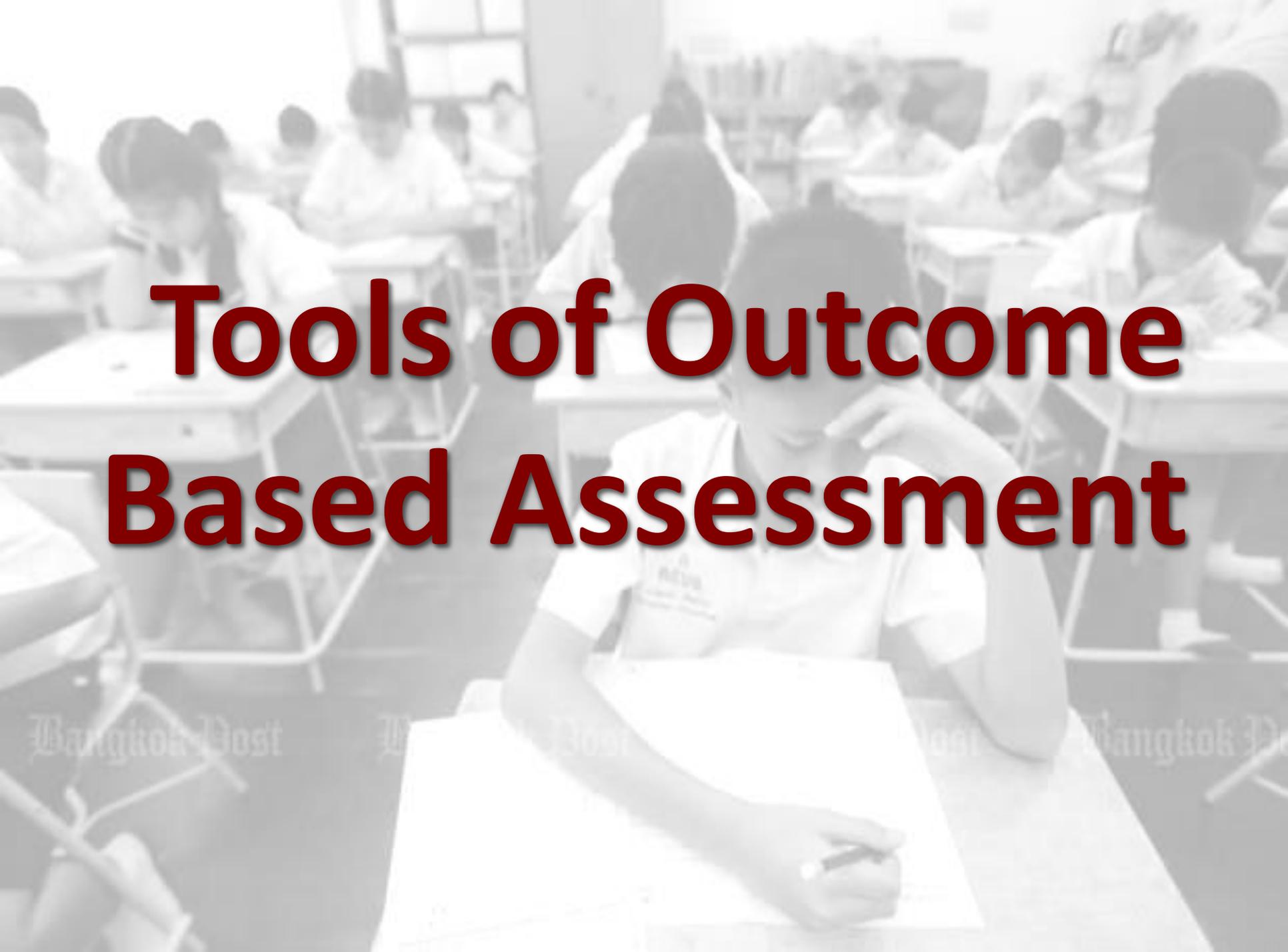
- Design **assessment scheme** for a course.
- Develop a **marking scheme** for the **designed questions and expected answers** as per the breakup/segments of questions designed.
- Provide **model answers** for the designed questions.

Practicability (Usability)

- The evaluation system should be feasible and implementable.
- It should be easy for effective administration of the designed test so that any person can administer without difficulty, in specified time.
- The evaluation procedure should be economical from the point of view of money and time.

How to Assess ?

Direct and Indirect Tools of Assessment



Tools of Outcome Based Assessment

Bangkok Post

Bangkok Post

Post

Bangkok Post

OBE and CRT

In OBE & C, the focus is on Criterion-referenced Tests (CRT), which measures students' performance against a fixed set of predetermined criteria or learning standards.

Direct Tools for Assessment

- Check list
- Rating scale
- Assessment Rubric
- Pen paper test
- Skill test
- Observation sheet
- Incidental records
- Viva-voce
- Attendance
- Lab Sheet
- Lab Journals

Direct Tools for Assessment

1. Quizzes
2. Assignments
3. Open book Exams
4. Mid Term Exams
5. End Semester Theory Exams
6. End Semester Practical Exam
7. Mini, Micro and Capstone Projects
8. Seminars
9. Practical Exams
10. Unit Test
11. Log Book

Direct Tools for Assessment

- **Project based learning**
(Mini, Micro and Capstone Projects)
- **Field visits**
- **Skill training/hands on practice**
- **Video demonstrations**
- **Laboratory**
- **Workshop**
- **Portfolio based assessment**
- **Self assessment**
- **Peer Feedback**

Indirect Tools for Assessment

- Graduate exit survey
- Course Exit survey
- Employers survey
- Alumni Survey
- Peer survey
- Indirect assessment Rubrics

Assessment Digital Tools

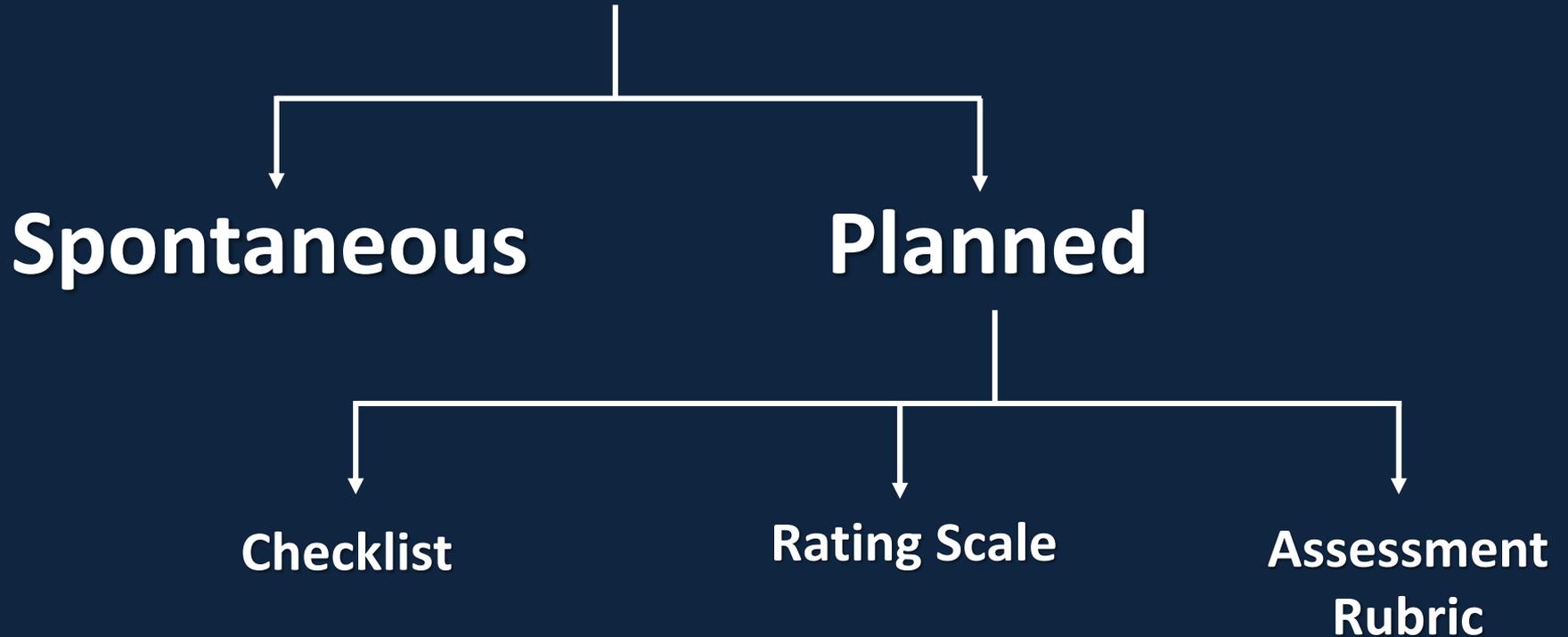
Formative Assessment Tools

- Portfolio Assessment through Padlet
- Self Assessment through OER
- Using Google Form (Pre-survey, Assessment of Pre-requisite Knowledge, MCQs, Check Boxes)
- Kahoot
- Multiple Choice Grid
- Checkbox Grid

Summative Assessment Tools

- **Google Form**
- **Rubi Star for Preparing Assessment Rubric**
- **Cmap for Preparing Concept Map**
- **Multiple Choice Grid**
- **Checkbox Grid**

Observation



Check List

Activity/Task/Experiment Title:

| S. No. | Criteria of Performance/Assessment | Whether the student has performed the task? (Please tick appropriately) | |
|--------|------------------------------------|---|----|
| | | Yes | No |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 5. | | | |
| 6. | | | |

Check List with Rating Scale

Activity/Task/Experiment Title:

| S. No. | Criteria of Performance/Assessment | Rating Scale | | | |
|--------|------------------------------------|--------------|-----------|------|------|
| | | Excellent | Very Good | Good | Fair |
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |
| 5. | | | | | |
| 6. | | | | | |

ASSESSMENT SCHEME

| S. No. | Performance Criteria for Assessment | Yes/No (Tick Appropriately) | Rating scale | | | | % weight age |
|--------|---|-----------------------------|--------------|----------|----------|-------------|--------------|
| | | | 1 (Poor) | 2 (Fair) | 3 (Good) | 4 (V. Good) | |
| 1 | Process Assessment (40 to 60%) ----- ----- ----- ----- | | | | | | |
| 2 | Product Assessment (40 to 60%) ----- ----- ----- ----- | | | | | | |
| | Total 100% | | | | | 100 | |

Practical/Experiment Title: _____

| Sr. No | Criteria of Performance and Assessment | % Weightage | Performance by Students | | If Yes, to what extent | | | |
|-------------------------|--|----------------|-------------------------|----|------------------------|------------------|-------------|-------------|
| | | | YES | NO | 1 (Excellent) | 2 (Very Good) | 3 (Good) | 4 (Fair) |
| Process Criteria | | 60-70 % | | | | | | |
| | Performance of Experiments | | | | | | | |
| | Follow safety rules | | | | | | | |
| | Records of observation | | | | | | | |
| | Handling of tools | | | | | | | |
| Product Criteria | | 32-40 % | | | | | | |
| | Quality of product (Strength) | | | | | | | |
| | Results and interpretation | | | | | | | |
| | Lab journal preparation | | | | | | | |
| | Presentation | | | | | | | |
| | Viva voice | | | | | | | |

Assessment Rubric

What is a Rubric?

- Tool of Qualitative Assessment & Learning in all the three domains
- Provide benchmark standards of Performance/Task Specific Criteria for OBE
- Supports CRT

Advantages of using rubrics

For the Professor

- Allow evaluation and assessment to be more objective and consistent
- Help focus to clarify his/her criteria in specific terms
- Provide useful feedback regarding the effectiveness of the instruction
- Provide benchmarks against which to measure and document progress

For Students

- Help them define "quality"
- Promote student awareness of about the criteria to use in assessing peer performance
- Help students judge and revise their own work before handing in their assignments.
- Clearly show the student how their work will be evaluated and what is expected

Types of Rubrics

- Analytical
- Holistic

Analytic Rubric

Describes levels of performance for *each* criterion to assess student performance on each of them.

Analytical Rubric

- Divides a product or performance into essential traits that are judged separately.
- Analytical rubrics are usually more useful for day-to-day classroom use since they provide more detailed and precise feedback to the student.

Analytical Rubric - Research

| | | Levels of Performance | | |
|---------------------|--------|---|--|---|
| Criteria | Weight | 1 | 2 | 3 |
| Number of Sources | x1 | 1-4 | 5-9 | 10-12 |
| Historical Accuracy | x3 | Lots of historical inaccuracies | Few inaccuracies | No apparent inaccuracies |
| Organization | x1 | Can not tell from which source information came | Can tell with difficulty where information came from | Can easily tell which sources info was drawn from |
| Bibliography | x1 | Bibliography contains very little information | Bibliography contains most relevant information | All relevant information is included |

Rubrics- Holistic

- Assigns a level of performance by assessing performance across multiple criteria as a whole.
- **Does *not* list separate levels of performance for each criterion.**

Rubrics- Holistic

- Involves one global, holistic rating with a single score for an entire product or performance based on an overall impression.
- These are useful for summative assessment where an overall performance rating is needed, for example, portfolios.

Holistic Rubric - Research

Rubric

3 - Excellent Researcher

- included 10-12 sources
- no apparent historical inaccuracies
- can easily tell which sources information was drawn from
- all relevant information is included

2 - Good Researcher

- included 5-9 sources
- few historical inaccuracies
- can tell with difficulty where information came from
- bibliography contains most relevant information

1 - Poor Researcher

- included 1-4 sources
- lots of historical inaccuracies
- cannot tell from which source information came
- bibliography contains very little information

Purposes of Assessment Rubric

- ★ **Self Assessment Tool by Students for identification of Strength and weaknesses and for Improvement**
- ★ **Uniformity of Instructions by Teachers using SMART indicators**
- ★ **Key/ Core/ Explicit Criteria Identification**
- ★ **Enhances Validity and Reliability**

Purposes of Assessment Rubric

- ★ **As reference for Students for practical performance/Skills Development/ Practice**
- ★ **Support Work based learning**
- ★ **Improves quality of learning by identification of Strength and weaknesses and for Improvement**
- ★ **Tool for Portfolio based Assessment (Showcase)**
- ★ **For Feedback and Improvement**

Purposes of Assessment Rubric

- ★ For Certification
- ★ Reduces Subjectivity
- ★ For diagnosis and remedial measures
- ★ Grading
- ★ Promotion
- ★ Selection process
- ★ Learning Tool for novice teachers/students
- ★ Transparency in teaching, learning and assessment

Assessment Rubric

Activity/Task/Experiment Title:

| S. No. | Criteria of performance of Assessment | Descriptive Rating Scale | | | |
|--------|---------------------------------------|--------------------------------------|--------------------------------------|---------------------------------|---------------------------------|
| | | Description on excellent performance | Description on very good performance | Description on good performance | Description on fair performance |
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |
| 5. | | | | | |
| 6. | | | | | |

Experiment Title: _____

| Sr. No | Criteria of Performance and Assessment | % Weightage | Performance by Students | | If Yes, to what extent | | | |
|-------------------------|--|----------------|-------------------------|----|-------------------------|-------------------------|-------------------------|-------------------------|
| | | | YES | NO | 1 (Excellent) | 2 (Very Good) | 3 (Good) | 4 (Fair) |
| Process Criteria | | 60-70 % | | | Description of criteria | Description of criteria | Description of criteria | Description of criteria |
| | Performance of Experiments | | | | | | | |
| | Follow safety rules | | | | | | | |
| | Records of observation | | | | | | | |
| | Handling of tools | | | | | | | |
| Product Criteria | | 32-40 % | | | | | | |
| | Quality of product (Strength) | | | | | | | |
| | Results and interpretation | | | | | | | |
| | Lab journal preparation | | | | | | | |
| | Presentation | | | | | | | |
| | Viva voice | | | | | | | |

ASSESSMENT OF WORKSHOP EXERCISE

Performance on Task (Process Evaluation)

Ability to read drawing.

Ability to follow correct process.

Manipulative skills/
handling of machines,
tools & material.

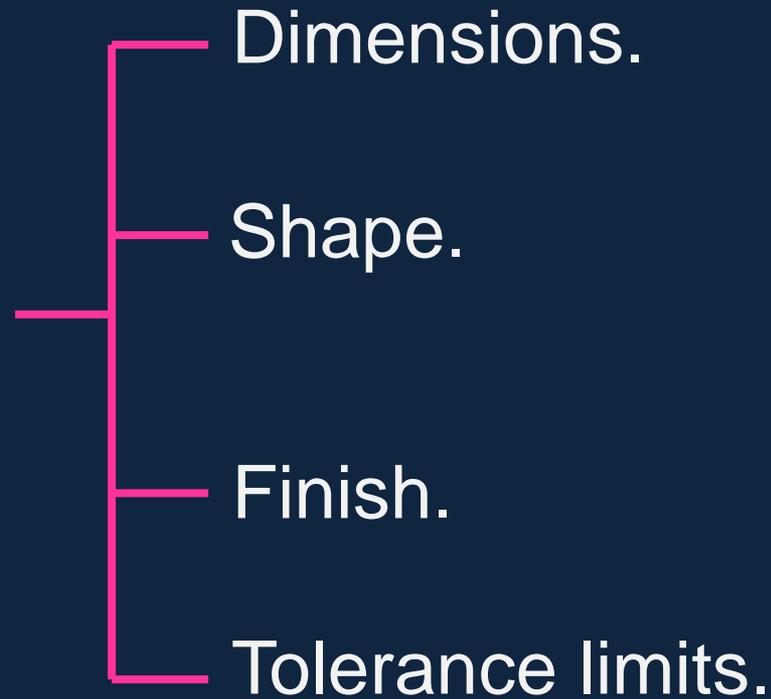
Observance of safety rules.

Ingenuity in the use of
material.

Timely completion of job.

ASSESSMENT OF WORKSHOP EXERCISE

Quality of Product
(Product Evaluation)



ASSESSMENT OF WORKSHOP EXERCISE

General Behaviour

Attendance and punctuality.

Care of tools.

Care of working space.

Use of Material

Use of working time.

Attitudes towards colleagues.

Responsibilities

ASSESSMENT OF WORKSHOP EXERCISE

Viva-Voce

———— Understanding of various
processes/ operations,
related concepts &
principles

Challenges/Issues for Assessment

- Need to align/match the assessment system with the outcome based curriculum
- Need of alignment of the curriculum, instruction and assessment
- Mapping of POs, COs and Session outcomes
- Assessment of PEOs
- Ensuring the Attainment of POs and COs
- The academic quality of examination i.e. question paper in Indian engineering education system

Challenges/Issues for Assessment

- **Validity of question paper with learning outcomes**
- **Design of assessment questions that can reflect real life situations and require comprehension, information retrieval, analysis, presentation etc.**
- **Using different methods/ strategies of evaluation other than routine rote learning exams.**
- **Identification of performance indicators for assessment of assignments, seminar, experiments, activities, task, project etc.**
- **Analysis, implementation and assessment of curriculum based on domains of learning and other factors.**

Challenges/Issues for Assessment

- Use of technology for formative and summative assessment.
- Design of Meticulous system and support system for online and offline T-L.
- Implementation and assessment of national initiative for new technical teachers training of AICTE, MHRD.
- Design and development of assessment rubric bank for each task, experiment, project, activity, assignment, seminar, industrial visit of each course.
- Reliability of assessment to cater large masses
- Design of valid question paper and question bank
- Development of course wise and outcome wise question bank at different levels of cognitive domain and psychomotor domain for cognitive testing and performance assessment

Challenges/Issues for Assessment

- **Continuous and comprehensive assessment.**
- **Vocationalisation of higher technical education and its assessment.**
- **Assessment of integrated project/problems during the course.**
- **Accreditation of programmes.**
- **Implementation of online MOOC courses and their assessment.**
- **ICT based teaching learning vs ICT based assessment.**
- **Use of ICT for skill learning and assessment.**
- **Developing and enhancing teaching proficiency of teachers for ensuring learning outcomes.**

Challenges/Issues for Assessment

- **Compulsory massive teacher training on awareness about assessment of cognitive, psychomotor and effective domain**
- **Use of appropriate assessment strategy for the outcomes in different domains and different levels.**
- **Cope up the learning style of 21st century students and their assessment.**
- **Design of question paper as per the requirement of online assessment at different levels of cognitive, psychomotor domain.**
- **Integrated approach of teaching, learning and assessment. Need of an agency to monitor the same.**

Challenges/Issues for Assessment

- Interference due to social pressure, political pressures etc.
- Assessments of teachers should not be linked with students' performance. Teachers are pressurized to give more marks
- Orientations of teachers on assessment of project work, Self assessment, portfolio based assessment etc
- Orientation of teachers on assessment of affective domain in integration with cognitive and psychomotor domain.
- Insufficient resources (Physical & human resources at Technical Institutes)

Challenges/Issues for Assessment

1. Undue focus on marks and certification
2. Focus on assessment of high level outcomes
3. Focus on assessment of complex outcomes
4. Negligible assessment in psychomotor and affective domain. Work based learning used for assessing theory.
5. Liberal Marking
6. Lack of assessment culture and language of assessment (required for development of ability to self assess –required for self directed or life long learning)

Rubric for Project Work

Criteria of Assessment of Project Work

1. **Project Planning – Selection, Scope & Rationale**
2. **Design, Development and Execution of Project**
3. **Quality of Product, Report Writing & Presentation**
4. **Project's potential -Future Scope/Recommendations for further studies**

Steps/ Criteria of Assessment of Project Work

**Assessment for Learning +
Assessment as Learning
(By Portfolio Preparation)**

**Project Planning –
Selection, Scope &
Rationale**

**Design Development &
Execution of Project**

**Quality of Product,
Report Writing &
Presentation**

Process Assessment

Assessment of Learning

**Project's Potential-
Future Scope &
recommendations for
further studies**

Product Assessment

1. Project Planning – Selection, Scope & Rationale

- Selection of relevant industry based projects
- Rationale/Application
- Literature survey
- Outcomes to be attained
- General Behaviour

2. Design, Development and Execution of Project

- **Methodology Adopted**
- **General Behaviour**
- **Innovativeness**
- **Creativity**
- **Originality**
- **Pro-activeness**

2. Design, Development and Execution of Project

- **Initiativeness**
- **Cost Effectiveness**
- **Resourcefulness**
- **Development of Soft skills/Generic skills**
- **Environmental Considerations**

3. Quality of Product, Report Writing & Presentation

- **Report writing**
- **Clarity of outcomes to be attained**
- **Presentation of Data**
- **Data Analysis and Interpretation**
- **Quality of product**

3. Quality of Product, Report Writing & Presentation

- **Communication and Presentation**
- **Voice Audibility and modulation**
- **Use of Media and Methods**
- **Audience satisfaction**
- **Outcomes to be attained**

4. Project's Potential- Future Scope & recommendations for further studies

- **Papers published or Awards Received**
- **Exhibition/Display/showcase of project**
- **Prototype Developed**
- **Applications in real life**
- **Recognition**
- **Future scope/ Recommendations - Related areas/sub areas for further studies**

**Percentage Weightage of
broad Assessment Criteria
under Project work will
vary for Micro Projects and
Capstone Projects.**

Assessment Rubric for Project Work

| Broad Assessment Criteria of Project Work | Descriptive Rating Scale | | | |
|--|--|---|---|---|
| Project Planning – Selection, Scope & Rationale | V. Good | Good | Fair | Poor |
| a) Selection of relevant industry based projects and its rationale application | Project title selected as per curriculum and industry relevance . High potential for industrial applications. Extensive industrial survey done to identify the topic. In depth knowledge about curricular requirement also. | Project title selected as per focus on curriculum relevance. Low relevance with industrial applications. Industrial survey was done to some extent to identify the topic. In depth knowledge about curricular requirements | Project title selected as per focus on industrial relevance. Low Curriculum relevance. | Project title identified casually . Not judged the curricular and industrial relevance |

Assessment Rubric for Project Work

| Broad Assessment Criteria of Project Work | Descriptive Rating Scale | | | |
|---|---|--|--|--|
| | V. Good | Good | Fair | Poor |
| Project Planning – Selection, Scope & Rationale | | | | |
| b) Literature survey | Explored extensively through literature review, societal needs and through internet and other sources. | Reasonably good efforts made for literature review through internet and other sources. | Demonstrated less efforts in literature review through different sources. | Demonstrated no efforts in literature review through different sources. |
| c) General Behaviour | Demonstrated Initiative, Proactiveness, attitude of Enquiry, sincerity, punctuality etc at very high level to under take project work. | Demonstrated initiativeness, proactiveness, sincerity, punctuality at considerably high level | Demonstrated initiativeness, proactiveness, sincerity, punctuality to some extent only. | Undertake work only as per the direction of teacher. Signs of initiativeness, proactiveness, sincerity, punctuality are not displayed . |

Assessment Rubric for Project Work

| Broad Assessment Criteria of Project Work | Descriptive Rating Scale | | | |
|---|--|--|---|---|
| | V. Good | Good | Fair | Poor |
| Project Planning – Selection, Scope & Rationale | | | | |
| d) Outcomes to be attained | Outcomes written meticulously aligned with project titles | Outcomes written with few mistakes in the statements but are relevant to project titles | Outcomes written with many mistakes in the statement but are relevant to project titles. | Neither outcomes are written properly, nor relevant to project titles. |

Assessment Rubric for Project Work

| Broad Assessment Criteria of Project Work | Descriptive Rating Scale | | | |
|---|---|------------------------------------|-------------------------------------|---|
| Design Development & Execution of Project | V. Good | Good | Fair | Poor |
| <p>a) Methodology Adopted -</p> <ul style="list-style-type: none"> • Appropriateness • Feasibility • Flexibility • Clarity • Relevant to outcome achievement • Design of model/Prototype/process/Assembly. | Satisfy all the conditions laid down | Fulfil only some conditions | Fulfil only a few conditions | Methodology adopted does not match with the outcomes |

Assessment Rubric for Project Work

| Broad Assessment Criteria of Project Work | Descriptive Rating Scale | | | |
|---|--|--|---|---|
| | V. Good | Good | Fair | Poor |
| Design Development & Execution of Project | | | | |
| b) General Behaviour <ul style="list-style-type: none"> • Manipulative skills • Innovation • Reactivity • Originality • Cost effectiveness • Resourcefulness, • Environmental consideration • Challenges faced • Proactiveness • Initiativeness • Ability to follow correct procedure | Meet almost all the criteria laid down. Effort work put in to carried out original work taking care of environmental consideration coast effectiveness and so on. | Fulfil only some conditions. Prototype/model developed casually | Fulfil only a few conditions. Project seem to be copied from someone | Project seem to be purchased and hence does not developed the required ability |

Assessment Rubric for Project Work

| Broad Assessment Criteria of Project Work | Descriptive Rating Scale | | | |
|--|---|---|--|--------------------------------|
| | V. Good | Good | Fair | Poor |
| Design Development & Execution of Project | | | | |
| c) Maintenance of Log Book/Daily Diary | Detailed daily entry made of the efforts/work done for design development and execution of project on different aspects. | Frequent entries made on only some aspects | Once a week entries made casually | Log book not maintained |
| d) Preparation of Portfolio | Note to be assessed | | | |

Assessment Rubric for Project Work

| Broad Assessment Criteria of Project Work | Descriptive Rating Scale | | | |
|--|---|---|--|---|
| Quality of Product, Report Writing & Presentation | V. Good | Good | Fair | Poor |
| a) Quality of product <ul style="list-style-type: none"> • Dimensions • Shape • Tolerance limits • Cost Effectiveness • Marketability • Modernity | Fulfil almost all the criteria laid. | Fulfil most of the criteria laid | Fulfil some of the criteria laid | Fulfil only a few criteria laid |

Assessment Rubric for Project Work

| Broad Assessment Criteria of Project Work | Descriptive Rating Scale | | | |
|--|--|--|--|---|
| Quality of Product, Report Writing & Presentation | V. Good | Good | Fair | Poor |
| <p>b) Quality of Report Writing</p> <ul style="list-style-type: none"> • Quality of presentation and Organisation • Communication Skills • Style and language • Quality of diagrams, drawings and graphs • Accuracy of conclusion drawn. • Citing of cross references • Suggestions for further research. | <p>Fulfil almost all the criteria laid.</p> | <p>Fulfil most of the criteria laid</p> | <p>Fulfil some of the criteria laid</p> | <p>Fulfil only a few criteria laid</p> |

Assessment Rubric for Project Work

| Broad Assessment Criteria of Project Work | Descriptive Rating Scale | | | |
|---|---|---|---|--|
| Quality of Product, Report Writing & Presentation | V. Good | Good | Fair | Poor |
| <p>c) Quality of Presentation of Data</p> <ul style="list-style-type: none"> • Understanding of concepts, design, methodology, results, implications etc. • Communication Skills • Ability to draw conclusions and generalization • Use of media and methods • Audience satisfaction • Assessment of outcomes achieved. • Ability to defend the Q/.A. | Fulfil almost all the criteria laid. | Fulfil most of the criteria laid | Fulfil some of the criteria laid | Fulfil only a few criteria laid |

Assessment Rubric for Project Work

| Broad Assessment Criteria of Project Work | Descriptive Rating Scale | | | |
|--|---|---|---|--|
| Project's Potential- Future Scope & recommendations for further studies | V. Good | Good | Fair | Poor |
| <ul style="list-style-type: none"> ● Paper Published or Award Received ● Exhibition/Display/ Showcase of Project made ● Prototype Developed ● Applications in the world of work ● Recognition of Project work ● Future scope or Recommendations for further studies. | Fulfil almost all the criteria laid. | Fulfil most of the criteria laid | Fulfil some of the criteria laid | Fulfil only a few criteria laid |

Rubric for Presentation Skills

Assessment Rubric for Presentation Skills

| Assessment Criteria | Descriptive Rating Scale | | | |
|---|---|---|--|---|
| | V. Good | Good | Fair | Poor |
| Enthusiasm/Importance of the topic/Rationale | Demonstrates strong enthusiasm and Importance & rationale about the topic | Demonstrates some enthusiasm with mention of little importance of the topic | Mention of the topic only | Shows no interest |
| Content Knowledge | Demonstrate full knowledge by answering all questions raised ,with explanation | Demonstrate insufficient knowledge. Able to answer some questions, without explanation | Demonstrate incomplete knowledge. Able to answer only a few questions | Does not have knowledge and cannot answer about content |

Assessment Rubric for Presentation Skills

| Assessment Criteria | Descriptive Rating Scale | | | |
|--|--|---|--|--|
| | V. Good | Good | Fair | Poor |
| Content Delivery a) Proficient content delivery with eye to eye contact with Audience to maintain interest | Holds attention of entire audience with direct eye to eye contact with proficient content delivery for entire duration | Able to hold the attention of some audience ,with direct eye to eye contact for 60-70% of time. | Able to hold the attention of only a few audience ,only for 30-40% of time with less eye to eye contact | Not able to hold the attention of audience and not able to maintain eye contact . |
| b) Voice Audibility and Modulation | Excellent voice audibility and modulation as per need | Fairly Good vice audibility with less voice modulation | Satisfactory Voice audibility with poor voice modulation | Not audible and no modulation |

Assessment Rubric for Presentation Skills

| Assessment Criteria | Descriptive Rating Scale | | | |
|---|---|---|--|---|
| | V. Good | Good | Fair | Poor |
| c) Proficiency in Communication Skills | Effective oral communication skills with good pronunciation , with no grammatical mistakes, correct sentence formation and with moderate pace. | Fairly good oral communication skills with better pronunciation with a few grammatical mistakes and sentence formation and with little fast pace | Satisfactory oral communication skills with errors in pronunciation, grammar and sentence formation . Communication with slow pace. | Not able to communicate the content properly. |
| d) Presentation skills with or without media | Effective presentation skills in all situations, ensuring audience understanding about the topic | Fairly good presentation skills with and without use of media and ensuring audience understanding, about the topic | Satisfactory presentation skills using media only. Understanding of topic by audience is up to certain extent only. | Neither able to present properly nor ensuring understanding by the audience. |

Assessment Rubric for Presentation Skills

| Assessment Criteria | Descriptive Rating Scale | | | |
|--|---|--|---|--|
| | V. Good | Good | Fair | Poor |
| e) Non verbal communication/Expressions/ Body language | Pleasing, mannerism and body language with the audience | Reasonably good mannerism and body language with the audience | Satisfactory mannerism and body language with the audience | Poor demonstration of mannerism and body language with the audience |
| f) Summarisation and Review | Effective summarisation and review in points to ensure achievement of objectives | Fairly good summarisation and extent of achievement of objectives | Satisfactory summarisation . Extent of achievement of objectives is less | Not able to summarise |

Rubric For Laboratory Work

Rubric for Laboratory Experiment

| S. No. | Criteria of Performance (Check list of Performance) | Descriptive Rating Scale on specific experiment | | | | |
|--------|--|---|---------------------------------|---------------------|---------------------|---------|
| | | Excellent Performance | Very Good Performance | Good Performance | Fair Performance | Remarks |
| 1. | Process Assessment | Description to be written | Description to be written | | | |
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| 2. | Product Assessment | | | | | |
| | | | | | | |
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| 3. | General Behaviour | | | | | |
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| 4. | Viva- Voce | | | | | |
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