



## **Akhil Bhartiye Shiksha Samagam-**

# **A Roadmap to Competency Based Assessment: PARAKH**

**Date: 30<sup>th</sup> July 2023**

**Dr. Nirmaljeet Singh Kalsi IAS (Retd.)**

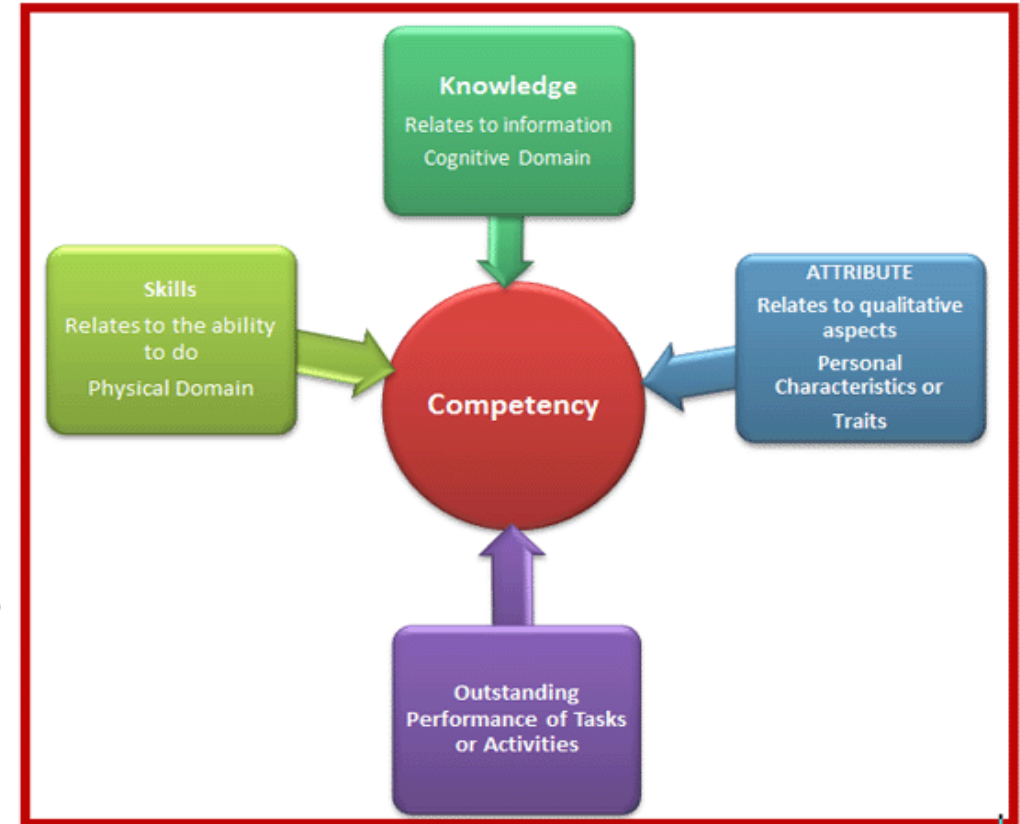
**Chairman, National Council for Vocational Education and Training  
Ministry of Skill Development and Entrepreneurship,  
Government of India, New Delhi**

# A Roadmap to Competency Based Assessment: PARAKH

- Dr. Nirmaljeet Singh Kalsi, Chairman, NCVET
- Dr. TG Sitharam, Chairman, AICTE
- Shri. Sridhar Rajagopalan, Co Founder, Education Initiatives
- Dr. Pratibha Kohli, Principal, Maharaja Agrasen Model School, New Delhi

# Learning Outcome, Competency & Competency Based Assessment (CBA)

- **Learning Outcomes (LO)** represent what a learner **knows, understands and is able to do** on completion of a learning process, and which would be expressed in terms of knowledge, skills and competence
- **Competency** means the **proven ability to use the acquired knowledge, skills or personal and social abilities**, in discharge of responsibility roles. It is the ability to do a job well
- **Competency-based assessment** is an **approach to evaluating** an individual's knowledge, skills, and abilities based on **specific competencies or job requirements**.



## Key Components of CBA

Identification of Competencies

Development of Learning Outcomes and Performance Criteria (LOs & PCs)

Designing Assessment Standards, Strategy & Tools

Independent, Fair & Reliable Assessments & Tech supported Governance

# National Education Policy – Guiding the Assessment Reforms 1/2

NEP Provisions	Para & Page No
<ul style="list-style-type: none"><li>Shift towards <b>competency-based learning and education</b>. Alignment of assessment tools (including assessment “as”, “of”, and “for” learning) with the <b>learning outcomes, capabilities, and dispositions</b></li></ul>	Para 4.6, Pg 12
<ul style="list-style-type: none"><li>The aim of assessment <b>from summative and primarily tests rote memorization skills to more regular, formative &amp; competency-based</b>, promotes learning and development for our students, and <b>test higher-order skills, such as analysis, critical thinking, and conceptual clarity</b>. The <b>primary purpose of assessment will indeed be for learning</b></li></ul>	Para 4.34 Pg 17
<ul style="list-style-type: none"><li><b>PARAKH as a standard setting body</b> - setting norms, standards and guidelines for student assessment and implementation</li></ul>	Para 4.41 Pg 19
<ul style="list-style-type: none"><li>The <b>National Testing Agency (NTA)</b> to offer a high-quality <b>common aptitude test</b>, as well as <b>specialized common subject exams</b></li></ul>	Para 4.42 Pg 19
<ul style="list-style-type: none"><li><b>Continuing Professional Development (CPD) of Teachers</b> for self-improvement - latest pedagogies on foundational literacy and numeracy, <b>formative and adaptive assessment</b> of learning outcomes, <b>competency-based learning, and related pedagogies</b></li></ul>	Para 5.15 Pg 22

# National Education Policy – Guiding the Assessment Reforms 2/2

<i>NEP Provisions</i>	<i>Para &amp; Page No</i>
<ul style="list-style-type: none"> <li>• <b>Scientific Assessment Methods</b>, designed to continuously improve learning and test the application of knowledge.</li> </ul>	Para 12.1 Pg 38
<ul style="list-style-type: none"> <li>• <b>General Education Council (GEC) to frame expected learning outcomes</b> for higher education programmes, also referred to as ‘graduate attributes’.</li> </ul>	Para 18.6 Pg 47
<ul style="list-style-type: none"> <li>• <b>NHEQF to be in sync with NSQF for integration of vocational education into higher education.</b></li> </ul>	Para 18.6 Pg 47
<ul style="list-style-type: none"> <li>• The SCERT to develop a <b>School Quality Assessment and Accreditation Framework (SQAAF). Certification of competencies of students</b> at the school-leaving stage by the Boards of Assessment/Examination in each State.</li> </ul>	Para 8.5 d, Pg 31
<ul style="list-style-type: none"> <li>• <b>Online assessment &amp; examinations; assessment frameworks encompassing design of competencies, portfolio, rubrics, standardized assessments, &amp; assessment analytics; assessment using education technologies focusing on 21st century skills.</b></li> </ul>	Para 24.4 h, Pg 60

# Competency Based Assessment – Enabling Initiatives & Frameworks

1. **National Education Policy 2020 and National Credit Framework (NCrF)**
2. **Enabling Competency and outcome Based Learning & Assessment** through Qualification Frameworks in, Higher Education VET & Skilling, and School Education
  - a) National Higher Education Qualification Framework (NHEQF)
  - b) National Skills Qualification Framework/ Recognition & Regulation of Assessment Agencies/ Blended Mode of Assessment
  - c) National Curriculum Framework
3. Qualification frameworks define Courses/ Qualifications in terms of
  - a) Competencies and Learning Outcomes,
  - b) Competency levels based on objective descriptors (Level Descriptors),
  - c) Assessment Criteria/ Performance Criteria.
  - d) Facilitate Mapping of Learning outcomes for enabling national/ international mobility
4. **Assessment Types** for LOs, PCs and Competency Based Assessment (CBA)
5. **Assessment Strategy & Methodology** for Competency Based Assessment
6. **Technology** for Supporting & Better Governance of Assessments (Platforms)

# Technology for Supporting & Better Governance of Assessments

- Use of technology is well established and matured (GRE, GMAT, CAT, CUET etc)
- Technology itself can be used for observing & recording of the process of assessment and its integrity.
- Students' behaviour /body gestures are also be observed and described using the embedded AI tools.
- Technology can support provide to impartial objective assessment.
- Automatic evaluation & summarizing of results is created by the software tools/ platform. (Non Touch evaluation)
- Menial usage of material, hence saving cost of training and assessment. (Speed, scalability)
- Indicative technological tools as learning aid as well as used to conduct assessments are listed below

Animation

Simulators

Metaverse

Digital  
Twins

XR

Special  
tools for  
Divyangs

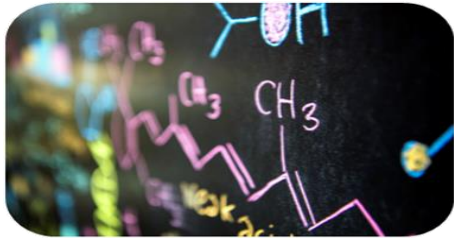
## Digital Infrastructure for Assessments - Features

- **State-of-the-Art technology**
- **AI enabled test engine** - Automated Creation of Test, Anti-cheat detection by Live Proctoring, Real time photo capturing of candidates etc.
- Audio and Video systems for **online proctoring and / or auto proctoring**
- Geo-tagging facilities
- Performance reporting and analytics
- **Online verification & authentication**



# What Constitutes Learning under National Credit Framework (NCrF) for which assessment methods will have to be specified.

- NCrF notified by Gol as **an inclusive one single meta framework** to seamlessly integrate the credits earned through school education, higher education and vocational & skill education
- NCrF Enables Creditisation of all Learnings. The Components of Learning **subject to assessment** could be:



Classroom Teaching, Lab work / class projects/ assignments/ tutorials



Technical / Vocational education, training, skilling, project work, field visits, Industry attachments



Online/ digital/ Blended learning



Internship/ apprenticeship/ experiential learning, On the Job Training (OJT).



Examinations/ class tests/ quizzes/ assessments.



Sports and games (e.g. national & international achievers), physical activities, performing arts, music, yoga, handicraft work, bag less days



Social work/ community work (e.g. contribution to adult education etc)/ NCC/ shramdan, debate and discussion.



# Provisions of NCrf enabling Competency based Learning & Assessment

**Competency based Learning:** LO to be prescribed for all academic/vocational programs

**Competency Levels:** All Qualifications/courses to clearly describe desired competency levels (NCrf/NHEQF/NSQF/NCF)

**Assessment is Mandatory** for earning Credits for any type of learning

**Learning Outcome (LO )based Assessment:** Credits to be assigned only after successful assessment against LO

**Creditisation of all types of learning, academic, skills, experiential leaning** based on assessment against LO

**Creditisation of Experiential Learning** including relevant experience and proficiency/professional levels acquired

**RPL, On Demand Assessment** and mainstreaming of students into educational ecosystem based on CBA

**NCrf creditises learning in any Mode;** offline, On-line and Blended Mode of Learning

**Competency Mapping** to enable pathways from Vocational Education, Training and Skilling with General Edu & vice versa

**Outcome Based Special Assessments** for competitions like hackathons/Olympiads or gifted students or exceptional achievers

# Assessment Types for Competency Based Assessment

- 1. Diagnostic Assessments:** Diagnostic assessments evaluate an individual's knowledge and skills on a specific topic. Conducted at the beginning, they help gauge the candidate's existing understanding of the subject.
- 2. Formative Assessments:** Formative assessments is a continuous learning-based evaluation, it's a technique to assess candidates' performance and progress simultaneously
- 3. Summative Assessments:** Summative assessment is to evaluate candidates learning at the end of an instructional unit by comparing it against some standard or benchmark. Summative assessments include midterm exam, final project, paper, senior recital
- 4. Ipsative Assessments:** It compares an individual with themselves, not others, forcing them to choose among options without a comparative scale, revealing strengths and weaknesses.
- 5. Norm-referenced Assessments:** Compare test takers to a statistically selected group to determine how they perform relative to the average student.
- 6. Criterion-referenced:** It measure performance against specific predetermined criteria or learning standards.

## Assessment Types for Competency Based Assessment

7. **Peer-to-peer randomized Assessments** enable students to critique and provide feedback to each other, fostering lifelong assessment and self-improvement skills while enhancing learning through knowledge exchange and motivation
8. **Industry Validated Assessments** ensure the relevance of vocational training by directly involving employers in assessing the acquired skills, making it an effective outcome-based assessment method.
9. **AI-based Assessments** offer continuous feedback to supervisors and instructors on candidates' learning progress, needs, and support requirements, while minimizing human bias for fair evaluations
10. **Self-Assessments** empower candidates to evaluate their own learning process and products based on agreed criteria, fostering active participation, honest assessment of strengths, and areas for improvement, encouraging meaningful discussions with instructors.
11. **Recognition of Prior Learning (RPL)** assesses learners' previous formal, non-formal, and informal learning against approved qualification standards to recognize their existing competencies and skills.
12. **Game-based Assessments** are engaging pre-hire tests designed as games to quickly evaluate candidates' skills. With a focus on mobile technology and Gen Z preferences, they offer an efficient and scalable solution for talent acquisition teams.

# Assessment Methodology for Competency Based Assessment



## Assessment Methodology Steps for CBA

- 1. Identify Competencies:** Clearly define the competencies or learning outcomes to be assessed for theoretical knowledge and practical skills.
- 2. Set Assessment Criteria:** Establish clear criteria for evaluating performance in each assessment method.
- 3. Select Assessment Methods:** Choose appropriate assessment methods based on the nature of the competencies.
- 4. Ensure Authenticity:** Implement measures to ensure the authenticity and integrity of assessments.
- 5. Provide Instructions:** Clearly communicate assessment instructions and expectations to candidates.
- 6. Blend Assessments:** Integrate different assessment methods to create a blended approach, using online and offline modes for both theoretical and practical assessments.
- 7. Feedback and Reporting:** Provide constructive feedback to learners and generate comprehensive assessment reports.
- 8. Continuous Improvement:** Regularly review and refine the assessment methodology based on feedback and results.

# Competency based Assessment in VET & Skilling (Use cases)

# Enabling Competency Based Assessment in VET and Skilling - NSQF

- ❖ **The National Skills Qualification Framework (NSQF)** is an **outcome and competency-based framework** which organizes qualifications according to a series of levels of knowledge, skills, aptitude, and responsibility levels **defined in terms of learning outcomes** which the learner must acquire **through formal, non-formal or informal learning** which may comprise of academics, vocational education, training & skilling and **experiential learning** including relevant experience and proficiency/ professional levels acquired, **subject to assessment**.
- ❖ NSQF has been revised and **realigned with NCrF & NEP**.

## Various features of NSQF Enabling CBA

1. All Qualifications are defined in terms of Competencies i.e. **National Occupational Standards (NOS)**
2. Each Qualification is assigned a **Competency level** based on **Level descriptors**
3. **Multiple Modes of Acquiring Learning outcomes/Competencies** – **Theory, Practical, Hands on/ studio/ workshop, Field based learning/ projects/ Internship & Apprenticeship, OJT**
4. **Competency based Assessment** through **Performance criteria** which are learning Outcome based performance indicators for outcome based assessment
5. Each Qualification to clearly demarcate an **Assessment Strategy** indicating Assessment Tools, **Assessment methodology, Assessment Criteria** and Assessor's Qualifications
6. **Trained & Certified Assessor** to conduct assessments of NSQF aligned Qualifications

## NSQF Level Descriptors

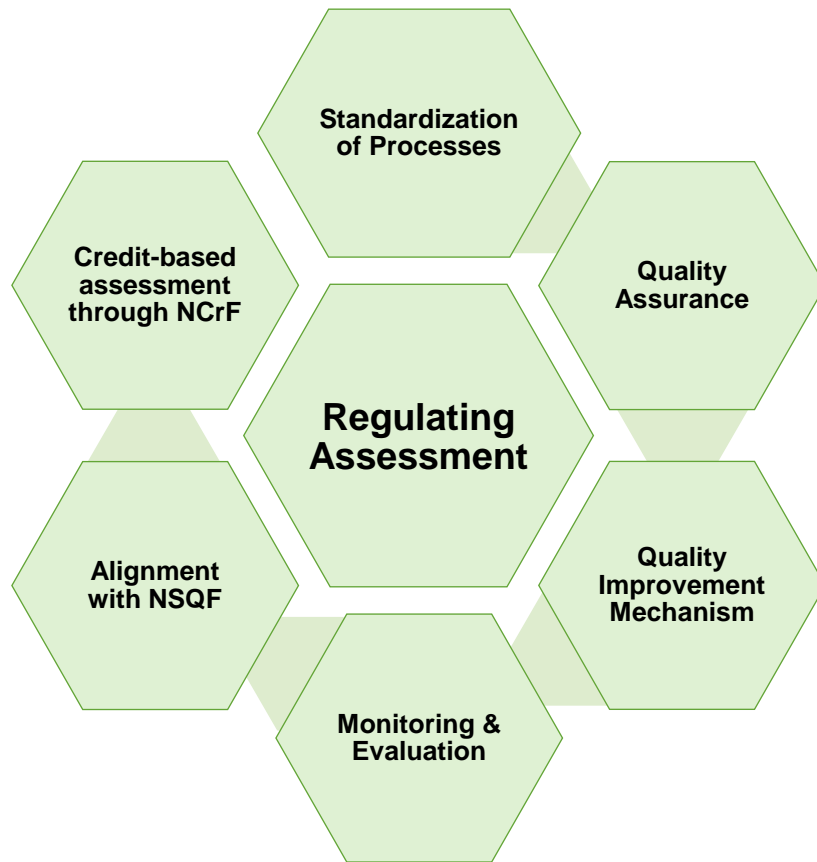
- **Professional Theoretical Knowledge**
- **Professional and Technical Skills/ Expertise**
- **Aptitude, mind-set, soft skills, employment readiness**
- **Broad Learning Outcomes**
- **Responsibility**



# Enabling Competency Based Assessment in Vet & Skilling - Guidelines

## B. Regulation of Assessment & Assessment Agencies

**Guidelines for Assessment & Assessment Agencies:** NCVET has developed & implemented guidelines detailing down the operational framework for Assessments in VET & Skilling. These guidelines aim to maintain **consistency, fairness, and quality** in the assessment process through

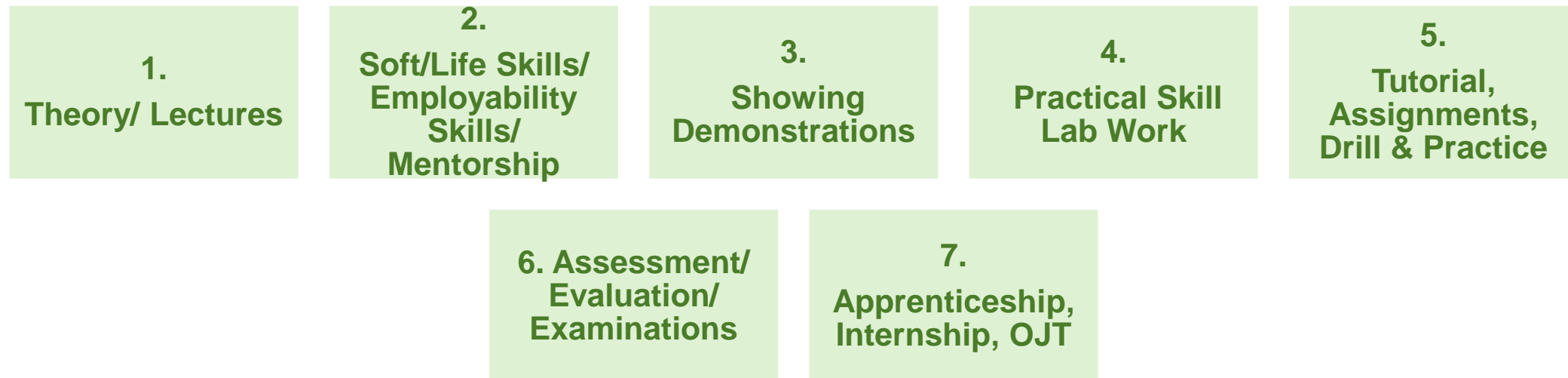


## Global Assessment Agencies/Platforms recognised for Assessments in VET & Skilling:



# Enabling Competency Based Assessment in Vet & Skilling - Guidelines

- **Blended Learning Guidelines:** Enables learning/Assessment of student not only via traditional face-to-face teaching but also Digital/ online media.
- A blend is decided depending upon various factors like Infrastructure, Digital reach, Accessibility, type of Competencies etc.
- Guidelines provides for Key Features of Assessment Engine amenable to Blended Assessments
- **7 verticals in Blended mode of Learning** including Assessment prescribed are as follows



# Road Map to enable Competency Based Learning & Assessment from Teaching and Examination

- **Transformation of Course Curriculum into Competency based pattern** with Detailed Learning Outcomes/ PCs
- Development of **Learning Material, Teaching/Training Pedagogies** and other tools for imparting outcome based learning
- **Capacity Building** of Institutions, Teachers/Trainers, Examiners, Assessors & learners (Training of Teachers/Trainers & Assesors )
- Preparation of **common norms, standards and guidelines for assessment and evaluation** by the concerned Agencies
- Building a **new culture of Assessment** based on Competencies with focus on *Formative & Adaptive Assessments* as prescribed by NEP
- Development of **Assessment Criteria, Tools, Methodologies** and corresponding **question banks** based on outcome based course curriculum & competencies
- Development of **Digital Infrastructure & Technology** to assist Competency based Assessments & enable IT based tracking of students
- Effective Operationalisation of:

PARAKH

NCrF

APAAR &  
ABC



**Thank You**

