

Reflection Report

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1. CBC, CBE, and CBA as a System

I will describe three competency systems that enhance learners' knowledge. CBC (Competency-Based Curriculum) aims to holistically develop learners, preparing them to handle real-life situations. CBE (Competency-Based Education) focuses the educational process on mastering specific competencies, with the learning pace tailored to the learner's development level. The key is the result of competency mastery, not the time spent. CBA (Competency-Based Assessment) evaluates the learner's ability to apply knowledge, skills, and competencies in real-world scenarios. I summarize these as: What do we study? How do we study? How do we assess results? As a physics teacher, I'll share examples of successful and unsuccessful integration of CBC, CBE, and CBA for the topic "Law of Energy Conservation." (CBC) The curriculum targets learners' ability to identify energy types and apply them in life. I explained the theory and assigned a project: "Dear learners, explore energy-saving methods and create a model or presentation for efficient energy use at home or school." (CBE) Learners engaged in active learning through practical tasks, boosting their interest. (CBA) Assessment included: • Quality of the model or presentation. • Correct use of energy conservation principles. • Group work participation and reflection. For "Refraction of Light," integration was unsuccessful. (CBC) The curriculum expects learners to apply light refraction in contexts like optical devices. (CBE) I focused on theory, showing formulas and asking for memorization, leaving no room for experiments or real-life examples. (CBA) Assessment relied solely on tests, checking formula memorization. I ignored competencies,

logical thinking, and analytical skills. Consequently, learners memorized formulas but didn't grasp refraction's essence, leaving their competencies undeveloped. In short, all three aim to shift education from theoretical knowledge to practical application, focusing on moving from memorization to real-world use

2. Curriculum Development and Learning Goals

In the CBC program, high quality means a system where learning objectives, activities, and assessment align to transform learners' knowledge into life skills.

1. CBC Learning Objectives:

- a) Competency-focused – learners not only gain knowledge but apply it in life situations.
- b) Specific, measurable – SMART (Specific, Measurable, Achievable, Relevant, Time-bound).
- c) Aligned with levels – per Bloom's taxonomy. Example for "Light Propagation": Learners explain the working principle of a simple optical device using the law of refraction to alter light's path.

2. Effective CBC Learning Activities:

- a) Connect knowledge to real life.
- b) Learners are active – engaging in research, analysis, group work, and discussions.
- c) Develop diverse skills – critical thinking, communication, creativity, collaboration. Example: • Conduct a group experiment on "Light Refraction." • Build a simple lens or periscope model. • Show real-life applications.

3. CBC Assessment:

- a) Formative – ongoing feedback, motivation, improvement.
- b) Summative – final results.
- c) Criterion-based – learners know what to do and the required level. Example: • Rubric-based assessment for projects or experiments. • Learner reflection. • Mind maps or portfolios.

Lesson Example: Topic: "Energy Types and Transformation." Objective: Learners distinguish energy types and explain their transformation using real examples.

Competency-Based Focus: Problem-solving, creativity, communication, cognitive skills.

Activity: Choose a daily-life device, identify its energy types and transformations, and present via a poster.

Assessment (CBA): • Rubric evaluated clarity, scientific accuracy, creativity, teamwork. • Formative feedback used stickers ("What was good?", "What can be improved?").

Strengths: 1. Linked theory to life, offering solutions. 2. Fostered collaboration. 3. Encouraged creativity. 4. Promoted self-analysis and self-assessment.

Areas for Improvement: 1. Insufficient time. 2. Support for weaker learners. 3. Discussing assessment criteria together.

This approach teaches students not just to memorize knowledge, but to understand and apply it.

3. Assessment Quality: Validity, Reliability, and Fairness

In CBA (Competency-Based Assessment), tests for learners must be high-quality and clear. In short, tests must be valid. Example of a valid test: Question: Name the law stating that a body's acceleration is inversely proportional to its mass and directly proportional to the force

acting on it. Options: A) Archimedes' Law B) Newton's First Law C) Newton's Second Law D) Pascal's Law Why it's valid: This question tests specific knowledge clearly. Its purpose: to check if learners can distinguish laws. Example of an invalid test: Question: "What was interesting in the physics lesson?" Options: A) I learned about electromagnets B) The teacher was funny C) I didn't like the lesson D) I didn't understand Why it's invalid: This question tests subjective opinions, not knowledge. It doesn't cover specific physics concepts or laws, making it unsuitable for assessing learning outcomes. A valid test question aligns with learning objectives, testing specific knowledge and skills. An invalid question is irrelevant, vague, or off-topic. In addition to the validity of assessments, prioritizing fairness and the diversity of learners is a fundamental requirement for high-quality evaluation. Fairness ensures equal opportunities for all learners. For valid tests to be fair:

- Written in clear language, avoiding complex, unnecessary words.
- Avoid cultural or social biases – e.g., rural learners shouldn't struggle with urban lifestyle questions.
- Cover content taught in the curriculum.
- Provide sufficient time for learners to think and demonstrate true knowledge.

Learner diversity is considered: some excel in logical thinking, others in practical tasks or text analysis. Validity, fairness, and diversity are closely linked. If a test is valid but designed only for high-performing learners, it's unfair. Conversely, if it accounts for diverse learners but contains imprecise questions, it lacks validity.

4. Grading and Standard Setting

I consider it essential to first define the precise purpose of the assessment before proceeding with evaluation. This purpose centers on determining what the student knows and what they are capable of doing. If there's a specific goal, assessment must align with it. For example, a learner should not only memorize Newton's laws but explain them with real-life examples. I assess this ability. I believe it is appropriate to assess understanding rather than mere memorization. This type of assessment evaluates not only a student's knowledge but also their ability to apply it, their skills, and their competencies. In other words, it is insufficient for a student to simply memorize a formula; what matters is their ability to apply it effectively in real-life situations. This assessment evaluates not just knowledge but the learner's ability to apply it, their skills, and competencies. Assessment must be transparent, fair, and aligned with learning objectives. Such assessment helps learners demonstrate their knowledge authentically and comprehensively. In transparent assessment, criteria, requirements, and expected outcomes are known to learners in advance. If learners know these criteria, they understand what's expected. I'd call this transparent assessment. Fair assessment occurs when all learners face equal requirements, equal opportunities, and no personal bias. No one gets special leniency or harshness. For example, if two learners solve the same problem—one high-performing, one average – they should receive the same grade. Fairness lies in assessing

the solution, not prior performance. Cut-off scores match a learner's points to a level, determining achievement: "excellent," "good," "satisfactory." First, clarify what and why you're assessing. Each task is scored with a maximum point value. If tasks are difficult, cut-off scores may be lowered; if easy, raised. Assessment in education should reflect not just academic performance but a learner's development, logical thinking, and ability to connect knowledge to life. Often, assessment boils down to "knows or doesn't know." But modern assessment should focus on development. The main goal isn't just grading but motivating learners forward. Assessment must be transparent.

5. Use of Rubrics

A rubric is essential for assessing student work. This assessment tool allows students to understand the specific expectations placed upon them. In the context of physics, I will explain how a rubric is utilized. I prepare several criteria and corresponding assessment levels in advance to evaluate the completion of a task. Using a rubric helps teachers assess systematically and fairly, applying the same criteria to all learners. Ready criteria simplify checking, saving time. It clearly shows what's correct and what needs improvement, making feedback easier. Teachers can transparently explain grades to parents, enhancing communication. Example for Physics, topic "Motion Graphs": • Correct graph plotting is assessed. • Motion type (uniform/non-uniform) is accurately described. • Formula application and calculation precision are key. • A physical understanding is formed in the conclusion. Learners understand what to focus on. They realize plotting a graph isn't enough; they must explain it. They see exactly what's required. With a rubric, learners evaluate their work, identify gaps, and learn self-assessment, boosting confidence in fair grading. This increases motivation, responsibility, and engagement. Several factors ensure success in developing and using rubrics effectively. The most important include: 1. Clear Objectives Rubrics must align with specific learning goals, clearly stating what's expected from learners. 2. Precise and Clear Criteria Each criterion should be specific, measurable, and written in clear language, simplifying assessment for both learners and teachers. 3. Distinct Assessment Levels Levels like "excellent," "good," "satisfactory" should have clear, detailed descriptions. 4. Introducing to Learners Early Learners should see the rubric at the lesson's start to know what they're assessed on. 5. Providing Feedback Rubrics help learners see strengths and weaknesses, understanding what to improve. 6. Flexibility and Adaptability Rubrics should adapt to the topic, class level, and learners' characteristics. 7. Transparent and Fair Assessment Rubrics ensure objective evaluation, avoiding subjective biases.

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