

Reflection Report

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1. CBC, CBE, and CBA as a System

In a competency-based education system, CBC (Competency-Based Curriculum), CBE (Competency-Based Education), and CBA (Competency-Based Assessment) function as an integrated triad. CBC is the educational programme that specifies the skills and competencies students must acquire, focusing instruction on achieving concrete outcomes and applying knowledge in real-world contexts. CBE is the pedagogical approach that enables learners to master these competencies through constructive methods and self-paced progression. CBA is the systematic evaluation of students' skills and knowledge against explicit criteria, assessing both cognitive understanding (per Bloom's taxonomy) and practical abilities. Unlike traditional education, CBC, CBE, and CBA are interdependent: CBC defines curriculum content; CBE operationalizes delivery and learning processes; and CBA determines the evaluation methods that measure effectiveness. When combined, they form a cohesive, powerful system aligning what students learn, how they learn, and how their learning is assessed. This alignment enhances instructional efficiency and tailors learning trajectories to individual needs. In my role as a trainer for a teacher professional development course, I observed a successful integration of CBC, CBE, and CBA in the Natural Sciences programme implemented since 2016 under the MJHBMS framework. CBC established learning outcomes aimed at developing logical reasoning and creative problem-solving. Through CBE, trainees advanced at their own pace, engaging with content relevant to their needs. CBA ensured assessment of practical skills by having trainees complete hands-on tasks rather than solely written exams. This approach

adhered to international educational standards and connected assignments to authentic experiences, increasing enthusiasm for the sciences and fostering 21st-century skills such as critical thinking, communication, citizenship, creativity, growth mindset, and collaboration. Moving forward, I plan to design future learning activities that leverage CBC, CBE, and CBA in tandem—crafting clear competency-based outcomes, implementing student-driven instructional strategies, and employing authentic assessments to ensure sustained engagement and success.

2. Curriculum Development and Learning Goals

I realized that the main difference between traditional curricula and a Competency-Based Curriculum (CBC) lies in focusing on learner-oriented, specific skills and approaches. CBC (Competency-Based Curriculum) involves clear objectives, practical instruction, interdisciplinary integration, active engagement, flexible pacing, and real-world assessment—enabling students to acquire not only knowledge but also the skills, attitudes, and confidence essential for success in school, work, and life. Accordingly, high-quality learning goals must align with the SMART requirements. I discovered that precise and measurable targets should direct students toward mastering specific abilities and understanding. For instance, in Natural Sciences, rather than the objective “Students understand how Kazakhstan’s high mountains were formed,” it is clearer to say “Students can identify how Kazakhstan’s high mountains formed and describe their characteristics.” Competency-based goals also concentrate on developing practical skills—e.g., “Students apply logical thinking skills during laboratory tasks.” Moreover, learning goals should spark student interest, such as “Students work on a project to address environmental issues.” From my experience training teachers, applying CBC successfully requires alignment with Bloom’s Taxonomy to foster cognitive, affective, and psychomotor development. In traditional assessment, learners often receive written tests that demand listing investigated concepts or providing definitions. By contrast, competency-based assessment emphasizes how students apply knowledge—what they can genuinely do. To monitor learners’ progress, formative assessment (individual tasks, reflections) is combined with summative assessment (tests, projects). Providing constructive feedback on achievements and gaps is vital. In the “Renewable Energy in Kazakhstan” project I observed, participants explored various alternative energy sources, offered solutions, and gave presentations. Their success arose from collaboration, idea-sharing, authentic problem-solving, and specific, measurable learning goals. Additionally, explaining assessment criteria from the outset and offering prompt, constructive feedback proved instrumental in improving performance and tracking learner development.

3. Assessment Quality: Validity, Reliability, and Fairness

During the course, participants took into account validity, consistency, fairness, and learner diversity when creating assignments or tests for students. The first priority was content validity: whether the test content matched the learning objectives. For example, if a test was designed for natural sciences, all questions had to directly relate to the topics taught in class. In my own test, I covered the main themes from the curriculum, thus achieving good content validity. In addition, we examined whether the test measured actual skills (e.g., logical thinking, problem-solving). The inclusion of items focusing on more than just knowledge, but also on practical skills, demonstrated strong construct validity. We also asked if the test results reflected students' true level of mastery. By comparing results with other assessment methods (e.g., practical tasks), we could confirm criterion validity. The test had clearly defined assessment criteria that were applied equally to all participants. To maintain consistency, the same rubrics and criteria were used, although subjective bias may arise for open-ended questions. Hence, clarifying criteria and adding examples proved critical. Ensuring equal conditions for all participants was essential. Questions were accessible to learners of various levels, from simpler to more challenging, thus indicating fairness. However, some learners struggled with language skills. Allowing extra time or clarifications could enhance fairness. When designing the test, using multiple question types (closed, open-ended, multiple-choice) accommodated diverse learner needs. Visual materials (images, diagrams) supported varied learning styles, though additional measures—such as oral administration or further explanation—might still be necessary. In conclusion, while validity and consistency were satisfactory, I saw that fairness and meeting diverse needs could be improved. Moreover, collaborating with colleagues to refine criteria and address individual requirements helps raise overall test quality.

4. Grading and Standard Setting

Grading and setting standards should be treated as key aspects of the educational process. To ensure that assessment is transparent and fair, students receive the evaluation criteria before testing and are given feedback on their results. This allows them to gauge their own achievement and identify areas for future improvement. Each assignment is evaluated using specific criteria and examples to maintain objectivity. These criteria are grounded in learning objectives. For instance, if the learning objective focuses on developing students' analytical thinking skills, the assessment criteria will include logical reasoning, argument analysis, and decision-making ability. All criteria must be precise, measurable, and clearly understood. Providing learners with this information in advance increases the transparency of grading. A test or assignment should cover the relevant content and measure different competencies,

such as theoretical knowledge, practical skills, and creative thinking, at varying levels of difficulty. This approach offers equal opportunities for students with different abilities. Employing the same rubrics and criteria for all participants is vital for maintaining transparency and fairness. Cut-off scores depend on the curriculum and the test's complexity. For example, on a 100-point scale, 60–70 might represent a “satisfactory” level. In determining cut-off scores, one considers average class performance, data from previous tests, and alignment with learning goals. These threshold scores may need review if the test difficulty or goals change. In addition, providing students with detailed feedback on their strengths and weaknesses fosters continuous improvement. Defining clear assessment criteria, setting cut-off scores, maintaining objectivity, and offering feedback enhance the process's effectiveness. Introducing adapted methods for students with special needs (e.g., oral exams or extra time), consistently monitoring progress, and involving students in self- and peer assessment further develop their critical thinking. Systematic assessment aligned with learning objectives promotes a fair and continuously improving educational environment.

5. Use of Rubrics

Using rubrics enables standardized, fair, and competency-based assessment of student learning across all courses. In a Natural Sciences unit, we assessed students' knowledge, skills, and abilities to develop a competency-based rubric. We first identified the specific competencies required—reading geographic maps, analyzing spatial data, and understanding environmental issues—and then defined the assessment criteria: data accuracy, analysis and synthesis, presentation structure and logic, and creativity and innovation. For each criterion, we specified three performance levels—advanced, proficient, and basic—and wrote detailed descriptors. This rubric outlines four competency domains: data accuracy (from complete precision at the advanced level to predominantly inaccurate data at basic level); analysis and synthesis (from deep, logical examination to weak analysis); presentation structure and logic (from clear, coherent organization to a disorganized format); and creativity (from novel ideas and solutions to minimal originality). When students use this rubric, they self-evaluate against each criterion, identifying strengths and weaknesses. This self-assessment fosters metacognitive skills and empowers learners to take ownership of their progress. Effective rubric design and implementation require that criteria be precise, comprehensible, measurable, and directly linked to learning objectives. Students must understand these expectations in advance, and rubrics should include space for criterion-specific feedback to guide improvement. Pilot testing and subsequent revision based on performance data ensure the rubric's validity and reliability. Involving students in the development process increases their sense of responsibility and engagement. Regular use of rubrics maintains consistency in evaluation and reinforces focus on key competencies. Rubrics are essential tools for aligned

instruction and authentic evaluation: they provide clear criteria, support objective grading, and, through ongoing feedback, drive continuous improvement. Precise criteria, clarity, measurability, and active student involvement are the key factors that make rubrics both effective and practical. Ongoing review and refinement ensure rubrics remain relevant and responsive to student needs.

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