Reflection Report

Submitted by: Medetova Laura

Full Name:	Medetova Laura
External ID:	1325CbAT50
Gender:	Female
Age:	39
Submitted At:	2025-04-19 22:08

1. CBC, CBE, and CBA as a System

CBC (Competency-Based Curriculum), CBE (Competency-Based Education), and CBA (Competency-Based Assessment) are interconnected educational frameworks aimed at developing learners' real-world skills, not just content knowledge. In a biology classroom, these systems shift focus from rote memorization to practical, observable competencies such as analyzing data, applying biological concepts, and solving real-life environmental problems. CBC refers to the curriculum design that identifies key competencies learners should acquire, such as understanding ecosystems or explaining human physiological processes. It defines what should be learned. CBE is the implementation of that curriculum—how students learn. It supports diverse learning styles and paces. In biology, this may involve inquiry-based labs, project-based learning (e.g., investigating local biodiversity), and integrating cross-disciplinary knowledge like math in data analysis. CBA, then, evaluates whether students have mastered those competencies. Assessment tools may include rubrics, performance tasks, and portfolios rather than traditional exams. In biology, students might demonstrate understanding by modeling food chains or explaining genetic inheritance in real-life contexts. These three components work as a system: CBC sets the goals, CBE delivers the learning, and CBA checks for mastery. When integrated effectively, they foster deeper understanding and lifelong learning. In practice, the integration has shown both success and challenges. For instance, in one biology unit on environmental conservation, students conducted field observations, created presentations, and engaged in peer reviews. While students were highly engaged and

demonstrated real understanding, some teachers found it difficult to create appropriate assessments aligned with CBA principles. The success depended largely on teacher training and resource availability. In conclusion, while CBC, CBE, and CBA offer a transformative model, their effectiveness in biology education depends on coherent implementation, professional development, and contextual adaptation. CBC, CBE, and CBA work as a connected system. For successful integration, learning objectives, teaching activities, and assessments must be clearly aligned and consistently implemented across the curriculum.

2. Curriculum Development and Learning Goals

Designing Curriculum and Learning Objectives in CBC: A Biology Perspective Within the Competency-Based Curriculum (CBC), high-quality learning objectives are student-centered, action-oriented, and measurable. In biology, this means objectives should target not just knowledge acquisition but also scientific reasoning, investigation skills, and real-life application. A good learning objective in this context might be: “Learners will be able to analyze and explain the impact of human activities on local ecosystems using data collected from their environment.” Effective actions in CBC are those that support competency development. In biology, these include hands-on activities such as field observations, lab experiments, modeling biological processes, and collaborative research projects. The goal is to move students from passive to active learners, encouraging inquiry and critical thinking. Assessment in CBC should align with these objectives and actions. Competency-Based Assessment (CBA) includes tools like rubrics, observation checklists, student portfolios, and real-world performance tasks. For example, after studying photosynthesis, students may be asked to design an experiment to test how light intensity affects plant growth and then present their findings. I observed a CBC-aligned biology lesson on the human circulatory system. The learning objective was clear: “Students will explain the function and structure of the human heart and trace blood flow through its chambers.” The lesson included a group activity using diagrams and 3D models. Students then performed a peer-teaching task where they explained the process to each other. What worked well was the active participation and peer collaboration. Students showed deep understanding through discussion. However, the assessment was limited to a short quiz, which didn’t fully capture their competency in modeling or explaining the process. This could be improved by including performance-based assessments, such as presentations or concept mapping. In conclusion, aligning objectives, actions, and assessments in CBC for biology requires thoughtful planning, but it creates a richer, more effective learning experience.

3. Assessment Quality: Validity, Reliability, and Fairness

Assessment is a key component of the Competency-Based Curriculum (CBC), and its quality depends on three principles: validity, reliability, and fairness. I recently designed a biology assessment for a Grade 8 class on the topic of human impact on the environment. It included multiple-choice questions, a short written explanation, and a group project where students presented local solutions to pollution. Validity refers to whether the assessment measures what it is intended to. The project task was valid—it assessed students' ability to apply biological knowledge to real-world situations, such as proposing waste management solutions. However, some multiple-choice questions were only testing memorization (e.g., definitions), not deeper understanding. These items lacked content validity and should be revised to assess reasoning and application. Reliability concerns the consistency of results. In this case, the written and multiple-choice sections were easy to score consistently. However, the group project had subjective elements. To improve reliability, I used a rubric with clear performance indicators (e.g., clarity of explanation, use of scientific vocabulary, and teamwork). Still, scoring varied slightly between students due to differences in presentation skills rather than biological understanding. Fairness addresses how assessments consider students' diverse needs. Some students had limited English proficiency, affecting their ability to write responses. To ensure fairness, I allowed visual aids in presentations and accepted oral explanations in group tasks. This approach helped reduce bias and gave all students an equal chance to demonstrate their competencies. In conclusion, while the assessment showed strengths in promoting valid and authentic learning experiences, it required refinement to ensure consistent scoring and linguistic accessibility. High-quality assessment in biology must go beyond content recall and provide multiple ways for students to demonstrate their understanding fairly and reliably.

4. Grading and Standard Setting

Assessment and Standard Setting in Biology Education In a Competency-Based Curriculum (CBC) framework, assessment systems should be transparent, fair, and aligned with learning objectives. In my teaching context, the biology assessment system includes formative and summative assessments, with a strong emphasis on Competency-Based Assessment (CBA). Learners are evaluated not just on knowledge but on their ability to apply biological concepts, communicate findings, and solve real-world problems. The system uses descriptors such as Beginning, Developing, Proficient, and Advanced to assess competencies. These levels are linked to specific performance standards. For example, in a unit on cell biology, students at the Proficient level can explain the function of cell organelles and relate them to larger biological processes, while Advanced students can design simple experiments demonstrating osmosis or diffusion. Standard setting involves defining cut-off scores or performance descriptors that represent mastery. In our context, this is often done collaboratively by subject teachers using rubrics. For example, if a project assesses understanding of photosynthesis, a score of 80%

might indicate proficiency if students can explain the process and identify key factors affecting it. The use of analytic rubrics ensures alignment with learning objectives and adds transparency to grading. However, some challenges remain. Not all teachers are confident in setting clear, consistent performance standards. Also, some assessments still emphasize recall over application, which misaligns with CBC goals. To improve this, more training on rubric design and standard-setting workshops would be beneficial. In conclusion, while the assessment system in biology generally supports CBC principles, further efforts are needed to ensure that standard setting is consistent and that all assessments truly reflect competency. With clearer guidelines and teacher collaboration, the system can better support fair, valid, and goal-aligned evaluation of learners. The assessment system is clear and mostly fair, aligning with learning objectives.

5. Use of Rubrics

Using Rubrics to Support Learning and Assessment in Biology In a Competency-Based Curriculum (CBC), rubrics are essential tools for both teaching and assessment. I regularly use rubrics in my biology classes to guide student learning and to assess complex tasks such as experiments, projects, and presentations. Rubrics provide clear expectations and help students understand the criteria for success. For example, in a lesson on the human digestive system, students worked in groups to create models and present how different organs function and interact. I used an analytic rubric with four criteria: content accuracy, clarity of explanation, visual presentation, and collaboration. Each criterion had four performance levels—Beginning, Developing, Proficient, and Advanced. This structure helped students self-monitor their work and improved the quality of their presentations. Rubrics support learning by making objectives transparent. Students know what is expected and can take ownership of their progress. They also make assessment more objective and consistent, especially for open-ended tasks. By referring to the rubric during feedback sessions, I help students identify strengths and areas for improvement, reinforcing a growth mindset. The success of using rubrics depends on several key factors: Clarity and alignment: Rubrics must align with specific learning objectives and use clear, student-friendly language. Teacher and student familiarity: Both teachers and learners should understand how to interpret and use the rubric effectively. Consistency in application: Rubrics must be applied fairly and consistently across all students to maintain reliability. Student involvement: Involving students in rubric creation or review increases engagement and understanding. In conclusion, rubrics in biology not only enhance assessment quality but also actively support learning. When well-designed and consistently used, they are powerful tools in implementing the CBC approach. Rubrics make assessment clear, fair, and aligned with learning goals. In biology, they guide students, support feedback, and improve learning outcomes when used consistently and with clear criteria.

Digital Signature (CMS):

```
MIINNAYJKoZIhvcNAQcCoIINJTCCDSECAQExDjAMBggqgw4DCgEDAwUAMAsGCSqGSIb3DQEHAaCCBE0wggRJMIID
```