Reflection Report

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1. CBC, CBE, and CBA as a System

I consider the CBC, CBE and CBA system as an interconnected approach to learning, where each component creates a holistic structure from setting objectives to evaluating results. CBC is a program on developing practical skills through clear, measurable goals. CBE organizes the learning process through active participation, flexible pace, and hands-on activities, with a focus on equity and personalization. CBA tests mastered competencies. These concepts work in constructive alignment: goals (CBC) define learning (CBE), and assessment (CBA) validates their achievement. I observed an example of integration at the advanced training course "Methodology and Practice of Teaching the Python Programming Language," where I taught teachers the topic "Working with Conditional Operators." For CBC, I formulated the objectives for practical application: "creates a correct algorithm with branching for solving problems" and "develops a practice-oriented task that takes into account the age characteristics of schoolchildren." These objectives were specific, measurable, and relevant according to SMART principles. Learning (CBE) was built on the active engagement and flexibility. Teachers did an individual task: they wrote a code with conditional operators to solve the problem (check the divisibility of a number). Critical thinking and creativity this allowed to develop, as teachers could optimize the code in their own way. In groups they created methodological tasks for schoolchildren adapting them for different levels of learning. Assessment (CBA) was organized with a rubric, criteria with descriptors. This ensured validity (the score measured declared competencies) and transparency (participants knew the criteria

beforehand). Clear objectives guided learning, and practical assignments and rubrics allowed to see the connection between theory and practice. I noticed a challenge: some teachers with less work experience found it difficult to formulate differentiated tasks. This indicates the need for prior equalization of knowledge: I will add an introductory module on Python fundamentals and more examples of methodological approaches to strengthen accessibility and support for all participants.

2. Curriculum Development and Learning Goals

Qualitative learning objectives in the context of CBC must meet SMART principles and levels of Bloom taxonomy to develop appropriate skills. Such objectives are transparent to students and provide alignment with learning performance and assessment, creating a logical trajectory. Learning activities at CBC are aimed at developing the declared competencies through active involvement and practical tasks in real professional situations. It includes individual, pair, and group formats that stimulate critical thinking, collaboration, and creativity. Tasks must be authentic for participants to apply knowledge in their practice. Assessment in the CBC aligns with objectives and measures not only knowledge, but the ability to apply it. Preference is given to authentic assessment based on real products (projects, methodological works). At the advanced course for teachers on the topic "Fundamentals of working with lists in Python," the following objective was: to analyze and interpret program code using lists, preparing 3 examples for teaching students. This objective reflected both the subject and methodology measurement of teachers' training and was formulated in SMART principle. Learning activities included group work on the theory and pair work on teaching. After the discussion, the participants solved practical problems: brute force, filtering, sorting. Each task was complex and suggested different solving ways, which contributed to critical and algorithmic thinking. The assessment was with rubrics and clear criteria, for transparency and validity. The combination of studying theory and practice made it possible to involve participants in in-depth analysis of key theses of the topic. Participants took the initiative, asked clarifying questions, actively shared their experience. The pair discussion strategy worked well, with one explaining the decision to the other. But it was marked that some participants needed more time for practice and subject and methodology adaptation. I am going to enlarge pair work, add supporting and job templates, and offer examples of step-by-step explanations of complex code elements.

3. Assessment Quality: Validity, Reliability, and Fairness

Fairness considers the diversity of participants, making the score accessible to all. When organizing assessment, it is important to consider all three of these principles. At the course

"Python Teaching Methodology," teachers in groups were given the task to create multi-level tasks on the topic "Cycles.": draw up a task and write a methodological justification for it, indicating for whom this task is and what skills it develops. When offering this task to teachers, I pursued the goal - to check the ability to compose differentiated tasks on the level "creation" in Bloom's taxonomy. The task was valid: an instruction ("create and explain three tasks of different levels ") directly measured the required skill. The groups managed to easily draw up tasks for the first and second levels, but not all groups got advanced-level tasks: took additional time and teacher's support. Noted that some groups were fond of the technical complexity of the tasks, and not the methods. This was traced in groups with young teachers who had little work experience and that's why focused on the technical side of the task: it indicates the need to clarify the instructions for full validity. The assessment was through a rubric with criteria and descriptors. It was a peer group assessment, providing formative feedback. It was transparent, but reliability suffered: points sometimes diverged due to subjective interpretation of "clarity." More detailed criteria and descriptors would help to more clearly evaluate works and increase their reliability. Fairness was observed through group work: experienced teachers created high-level tasks, young ones - elementary and middle, that corresponded to their level and allowed everyone to be involved. The tasks were completed by all groups. For a better assessment, I will add task examples and training exercises for analysis of the rubric to increase reliability and fairness. This experience highlighted that CBC requires careful assessment to support all participants.

4. Grading and Standard Setting

I use a combined assessment system: a level scale, a point system, and formative feedback. Sample: when studying the topic "Cycles," participants do the task on compiling multi-level exercises with their methodological justification. For the assessment, a scale of three levels was used: "basic," "proficient," "advanced." This allowed to reflect the level of achieving specific skills in accordance with the lesson objectives. For a more objective and transparent assessment a 10-point scale was applied, where each range of points corresponded to each level of skills. Descriptors were developed in advance to criteria reflecting the expected observed behavior (e.g. "creates an assignment aimed at developing functional literacy"). Coherence with learning objectives is achieved through constructive alignment: each objective is formulated in the terms of observed behavior ("analyzes," "creates," "argues"), and tasks and evaluation strategies directly follow these formulations. This makes the process logical and aimed at developing competencies. Transparency is provided by criteria and descriptors to be discussed in advance. After the assessment, there is a stage for detailed formative feedback and clarifying the obtained score. The threshold score is determined by an absolute method, is equal to 5 points, it depends on the goal of the task: e.g., a result below 5 points on a 10-point

scale indicates partial achievement of competence and requires improvement. The absolute method ensures that the threshold score meets the learning objectives and observed behaviors rather than other participants' outcomes. I plan to develop high-quality detailed descriptors for each criterion, to determine threshold scores for the tasks to be assessed effectively. This will increase reliability and make the assessment system fairer for all participants.

5. Use of Rubrics

At an advanced course for ICT teachers, I use rubrics as a tool for objective assessment and formative feedback. I independently develop rubrics for each task based on learning objectives and expected observed behavior. This allows for constructive alignment between objectives, learning methods, and assessment criteria and makes outcomes clear and achievable for participants. When studying the topic "Fundamentals of work with lists in Python," participants performed a task that consisted of three coherent stages: analyzing and correcting code, writing a solution to a practical problem, and developing their own tasks for schoolchildren. For the assessment, a rubric was used with the levels "basic", "proficient", "advanced." It included criteria: "Code correctness," "Methodological adaptation," "Pedagogical feasibility," with descriptors for each level. This helped participants understand how to improve the quality of their work. Discussion of the rubric before finishing the task and then feedback made the assessment transparent and progressive. Participants compared their approaches, analyzed strengths, and got ideas for improvement. From the experience of using rubrics I identified the following key factors for the successful application of rubrics: - linking to learning objectives and competencies; - clear structure and clear wording; - discussion of rubrics before doing tasks; - use for evaluation and sef-analysis; - transparent formative feedback. Difficulties in using rubrics: -defining levels and descriptors for the task to assess the acquired skills; - teachers sometimes overestimate points during peer- or self-assessment- I turn to the rubric and, together with teachers, again analyze each descriptor and to a corresponding criterion. I plan to work more at the accuracy of the wording of the descriptors and analyze the rubric before and after doing tasks to increase the reliability and fairness of the assessment.

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