

THE THREE-PHASE VOR MODEL (CHALLENGE - COMPREHENSION - REFLECTION) AS A TECHNOLOGY FOR DEVELOPING CRITICAL THINKING IN A UNIVERSITY COURSE: GOALS, TASKS, AND TOOLS FOR APPLICATION

Rano Sadykovna Yankina

Associate Professor, Department of Pedagogy, Andijan State University Andijan, Republic of Uzbekistan.

Abstract: *The thesis presents an operational specification of the three-phase VOR model (Challenge - Comprehension - Reflection) for developing students' critical thinking in a "General Pedagogy" class. The aim is to align each phase's goals with a set of guiding teacher questions, concrete techniques, and observable, assessable learning results. The model is implemented in an 80-minute session: "Challenge" ≈15, "Comprehension" ≈45, "Reflection" ≈20; if necessary, a two-phase configuration with micro-reflection is possible. Formative assessment based on learning artifacts (INSERT sheet, cluster/map, table, mini-essay) and a brief public defense is substantiated. The communicative and value-laden nature of critical thinking is emphasized as the core of an innovative pedagogical technology. The practical effect is an increase in the share of active learning formats, reduced anxiety, strengthened reflection, and the transfer of methods across topics and courses.*

Keywords: *critical thinking; VOR model; Challenge–Comprehension–Reflection; General Pedagogy; active learning; formative assessment; INSERT; K-W-L; jigsaw; RAFT.*

RELEVANCE

Forming critical thinking is part of the core competencies of a 21st-century graduate and directly correlates with success in professional and civic spheres. For universities, this means a transition from knowledge transmission to managing students' thinking activity through structured instructional models. The three-phase VOR model for developing critical thinking (Challenge - Comprehension - Reflection) is substantiated and widely described in scholarly pedagogical literature; it allows variability in time and in the composition of stages (in some cases—two-phase classes based on "Challenge" and "Comprehension" with a mandatory brief final reflection).

Aim

To operationalize the VOR model for university disciplines by aligning the goals and pedagogical tasks of each phase with a characteristic set of guiding teacher questions and a set of instructional techniques; to propose a compact format of formative assessment of results within an 80-minute General Pedagogy session.

Methodological foundations and methods

Pedagogical modeling; an analytical review of domestic and international sources; lesson design as a planning tool; analysis of learning artifacts (INSERT sheet, clusters, tables, mind maps); development and expert calibration of rubrics for formative assessment of argumentation, evidential support, and transfer of methods of action.

Model and results

The VOR model sets a structured sequence of three phases with clear instructional functions, questions, and tools. Below is a synthesized specification that includes goals and typical questions at each stage. In addition, the operational linkage “phase goals — guiding questions — techniques — observable results” is specified; a compact two-phase configuration and the validation framework “artifact — rubric — brief defense” are proposed.

Table 1. Three-stage instructional model within the technology for developing critical thinking

Goals and tasks at the stages	Typical teacher questions
<p>Challenge phase</p> <p>1. Activating prior knowledge: at the beginning of the class the teacher activates the students' existing ideas, helps them recognize their initial level of preparation and identify zones of confidence/difficulty.</p> <p>Sample task: “What do I know about... (the innovative worldview of a teacher)” - individually for 2 - 3 minutes they record any information/associations, then exchange in pairs and compile a shared semantic field on the board.</p> <p>2. Student motivation: eliciting sustained learning motivation through pedagogical intrigue, surprising facts, provocative questions, real-life cases.</p> <p>Sample task: “Key words” - the teacher gives 5 words (competences, reflection, project, metacognition, digitalization); students forecast the content of the class from these words.</p> <p>Goals of the phase: interest; internal readiness; diagnosis of the initial level; personal engagement.</p> <p>Important: this stage is not graded and not criticized.</p> <p>This stage enables: a shift to active meaning-making; reduced anxiety; a basis for dialogue; a sense of contribution; preparation for conscious perception.</p>	<ul style="list-style-type: none"> ▪ What do you know about this?; What do you think we are going to discuss?; ▪ What does ... mean? ▪ Make a prediction.; ▪ Who thinks differently?; ▪ Why is this important?; ▪ Why does a future teacher need this?
<p>Comprehension phase</p> <p>1. Working with new material deliberately with a text/video/digital fragment; INSERT note-taking; clusters/tables; discussion in pairs/micro-groups; emphasis on analysis, interpretation, and argumentation.</p> <p>Sample task: “INSERT + cluster” - reading a section on “The content of content of education”; markings (V - knew, + - new, - - thought differently, ? - question); then a group cluster “goals - means - results” with references to the text.</p> <p>Effects: connection to prior experience; monitoring and adjustment of understanding; development of analytic skills; critical stance toward sources; formation of an argued position; a shift to productive learning.</p>	<ul style="list-style-type: none"> ▪ What new have you discovered?; ▪ What is the practical significance?; ▪ How does this relate to your experience?; ▪ What problem do you see and what are the alternative solutions?; ▪ What is your forecast for the development of the situation?
<p>Reflection phase</p> <p>1. Integration of knowledge: systematization and synthesis; transforming external information into internal knowledge.</p> <p>2. Developing evaluative judgments: self-assessment and critical reflection on one's own learning activity; comparing expectations</p>	<ul style="list-style-type: none"> ▪ What do I think about this?; ▪ How have my views changed?; ▪ What will I do

Goals and tasks at the stages	Typical teacher questions
and results; forming a position. Sample task: “3 2 1 + mini essay” - students record 3 facts, 2 questions, 1 conclusion on the topic “The university’s innovation environment,” then write a mini essay (150–180 words): “What and why will I change in my future pedagogical practice.” Outcomes of this stage: expressing in one’s own words; systematization; correction of earlier views; evaluation of the value of what has been studied; analysis of effort; development of stable self-reflection.	differently?; <ul style="list-style-type: none"> ▪ Where will I apply this knowledge?; ▪ What alternatives were considered and why?

Note: an expanded task bank for each phase for a class in the discipline “General Pedagogy” is provided below (Appendix A).

Detailed characteristics of the phases.

Appendix A. Task bank for the course “General Pedagogy” (fragment)

1. Challenge: “Thesis - Antithesis” — two opposing quotations about the role of the discipline are given; students in pairs formulate arguments for/against (5 minutes) and make a forecast of the module’s content.

2. Comprehension: “Jigsaw” — three subgroups read different materials (state standards / a school case / a study on blended learning), then reassemble into “home groups” and create a shared mind map.

3. Reflection: “RAFT” — role: homeroom teacher; addressee: parent council; format: justificatory letter; topic: “Why does the class need a project week?” (120–150 words); self-assessment by a rubric (argumentation, evidential support, respect for alternatives).

Challenge phase. The main function is to “launch” thinking: to activate prior knowledge and expectations, reduce anxiety, and set a personal meaning for the subsequent work. At this stage approximate wording is appropriate: the number of hypotheses and the boldness of assumptions are more important than precision. Practice shows that short intrigues (a paradoxical quote, a “surprising fact”) and anticipatory questions significantly increase engagement. Work in pairs/micro-groups is recommended to “start up” thinking activity.

Comprehension phase. The goal is to build one’s own understanding rather than “receive” a ready-made one. An effective sequence is: individual familiarization with the material → peer teaching in micro-groups → whole-class synthesis. INSERT/annotation techniques and visual models (cluster, map) allow the student to observe personal progress and adjust understanding in process. The emphasis shifts from memorizing facts to establishing connections, argumentation, and advancing warranted judgments.

Reflection phase. This is not “control,” but a meaningful completion: the student converts external information into internal knowledge, records changes in position, and formulates plans for transfer (where and how to apply methods of action). It is important to set the format of a brief final work (essay, scheme, table) that can be displayed, discussed, and assessed by clear criteria.

Flexible configurations. Depending on the purpose of the class, time available, and students’ preparedness, two-phase scenarios are appropriate (for example, “Challenge + Comprehension”) with a mandatory short micro-reflection (formats “one idea — one

question — one step” or “three words — two conclusions — one hypothesis”). Such variability supports the course rhythm and makes it possible to embed elements of critical thinking even in saturated thematic modules.

Assessment and learning outcomes. Priority is given to formative assessment: rubrics for the level of argumentation (clarity of thesis, relevance of evidence, coherence of conclusion), evidential support (references to the source/data, weighing alternatives), transfer (applicability of the method of action to a new task). Interim work: INSERT sheet, clusters, mind maps, comparison tables, source-based questions, micro-presentations. Final work — a mini-project/casewith public defense; a positional discussion format is also possible, with evaluation by criteria of evidential quality and respect for alternative positions. It is important to use self-assessment and peer assessment: they strengthen reflection and reduce dependence on external motivation.

Format of a double period (80 minutes): the class is organized according to a three-phase scheme — “Challenge” (≈15 min), “Comprehension” (≈45 min), “Reflection” (≈20 min). If time is short, a two-phase configuration (“Challenge” + “Comprehension”) with a mandatory micro-reflection (≈5 min) is allowed.

Conditions for effectiveness. (1) Psychological safety: the right to try and err without sanctions. (2) Mentoring and a transparent set of guiding teacher questions. (3) Visibility of progress through artifacts and checklists. (4) Link to profession-specific tasks. (5) Regularity: critical thinking develops as a habit requiring consistent practice.

Conclusion. The three-phase VOR model enables the teacher to consciously design a class, ensuring logical structure and substantive integrity. Its use helps overcome routinization and fragmentation in teaching, and learning acquires the character of productive, meaning-oriented interaction. In practice, the specification provides a ready-to-use lesson plan, a bank of techniques, and assessment rubrics; it increases the share of active learning formats, reduces anxiety, strengthens reflection, and supports transfer of methods across topics and courses.

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