



PEDAGOGICAL SIGNIFICANCE OF IDENTIFYING STUDENTS' RIGHT AND LEFT BRAIN ACTIVITY THROUGH LOGICAL TASKS

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ABSTRACT

This article describes a methodology for determining the functional activity of students' right and left brain hemispheres through logical tasks. The study examines analytical, creative, and balanced types of thinking and their mechanisms of manifestation. This approach allows individualizing the educational process, selecting methods appropriate to students' cognitive styles, and effectively evaluating cognitive development.

Introduction. In modern pedagogy, identifying the individual characteristics of students' thinking processes is of great importance for organizing personalized learning. The human brain consists of two hemispheres, each responsible for specific cognitive processes. Determining which hemisphere is more active helps reveal the student's thinking model, strategy for solving problems, and key factors contributing to academic success. This study aims to assess these processes through logical tasks.

1. FUNCTIONAL CHARACTERISTICS OF BRAIN HEMISPHERES

Scientific literature indicates that the left hemisphere governs analytical, sequential, and logical thinking, while the right hemisphere is responsible for imagery, intuition, and visual perception. These processes manifest differently in students based on how they process and interpret information.

A student with dominant left hemisphere tends to:

- prefer sequence-based algorithms;
- show interest in mathematical proofs and analysis;
- draw conclusions based on logical connections.

A student with dominant right hemisphere tends to:

- perceive images, graphics, colors, and shapes quickly;
- propose non-traditional solutions;
- approach problems through creative modeling and imagination.

A balanced student:

- performs both analytic and creative tasks effectively;
- combines reasoning with visualization;
- justifies ideas both graphically and verbally.

2. Purpose and tasks of diagnostics

The primary purpose of the diagnostics is to determine the student's thinking type and personalize the learning process. The main tasks include:

- evaluating analytical, creative, and reflective thinking;

- identifying hemispheric dominance;
- designing a strategy for enhancing cognitive abilities.

3. Diagnostic criteria and assessment system

Brain activity is assessed through three stages:

- 1) a mixed logical–creative test;
- 2) visual modeling tasks;
- 3) reflective discussion.

Assessment is based on analytical accuracy, imagination, and logical consistency of conclusions.

Final interpretation:

- 7–8 points: balanced thinking;
- 4–6 points: analytical thinking;
- 0–3 points: creative thinking.

4. Identifying hemisphere activity through logical problems. Logical tasks reveal not only students' knowledge but also their thinking processes. Different types of problems highlight different hemispheric activities:

- algebraic equations — analytical thinking (left hemisphere),
- constructing symmetrical figures — visual imagination (right hemisphere),
- graphical explanation — integrated thinking.

This approach allows a comprehensive assessment of mathematical and creative potential.

5. RECOMMENDATIONS FOR PEDAGOGICAL APPLICATION

Brain-activity diagnostics allow teachers to:

- adapt teaching methods to individual thinking styles;
- use step-by-step explanations for analytical learners;
- use models, graphics, visuals, and simulations for creative learners;
- develop bilateral thinking through balanced assignments.

CONCLUSION

Assessing students' left and right brain activity through logical tasks is an effective approach for identifying individual learning characteristics. This diagnostics develops:

- reasoning ability,
- analytical thinking,
- creative problem solving.

As a result, students' intellectual potential is maximized and educational effectiveness significantly increases.

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