PRACTICAL MECHANISMS FOR DEVELOPING STUDENTS' RATIONAL THINKING THROUGH GROUP COOPERATION

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Abstract. This study focuses on the development and testing of practical mechanisms for developing students' rational thinking through collaborative group activities. The paper presents specific methods and technologies for organizing educational collaboration that promote the development of critical, analytical, and logical thinking. The pilot study was conducted during the 2023-2024 academic year with the participation of 150 university students. The developed mechanisms include a system of gradually more complex group assignments, methods for facilitating group discussions, and technologies for reflective analysis of group activities. The results showed an increase in rational thinking indicators by 35-48% across various parameters.

Keywords: Group collaboration, rational thinking, practical mechanisms, collaborative learning, communicative competence, social interaction, cognitive development.

Introduction. Development trends in modern education show that, along with individual learning methods, the effectiveness of learning through group cooperation is increasing. Group cooperation is an important means of not only mastering the content of education, but also of developing students' rational thinking. Rational thinking is a complex, multifaceted phenomenon that, in addition to individual thinking processes, is also formed and developed in the context of social interaction. Group cooperation allows students to reflect on their

own thoughts, listen to and analyze the opinions of others, defend their position based on logical arguments, and participate in the process of collective thinking [1, 2]. The relevance of this study is that the potential of group cooperation in the development of rational thinking has not been fully explored and practical mechanisms have not been sufficiently developed. The purpose of the study is to develop scientifically based practical mechanisms for developing students' rational thinking through group cooperation, to test them experimentally, and to provide methodological recommendations based on the results. The importance of the research lies in proposing specific, practice-oriented mechanisms that can be applied in modern education[3].

Analysis of scientific works: Research on the development of rational thinking through group cooperation in European countries is extensive. The Finnish education system widely uses the "peer-to-peer learning" method, in which students not only exchange knowledge in the process of mutual learning in small groups, but also develop each other's thinking style. This method increases students' logical thinking and critical analysis skills. The Netherlands uses the "collaborative reasoning" model, in which students develop their argumentation skills and logical reasoning skills as they solve problem situations in groups. The "team-based learning" method is successfully implemented in prestigious universities in the UK, in which each group member develops his or her own rational thinking by fulfilling his or her role and contributing to the overall result of the group[4, 5]. In Sweden, the method of "structured academic controversy" is used, in which students improve their logical thinking and argumentation skills by defending opposing positions. In German educational institutions, the method of "problem-based collaborative learning" is being effectively implemented, in which students develop their analytical and synthetic thinking skills as they solve complex problems in groups[6].

Method: The research procedure consisted of the following stages:

"Preparatory stage" (2 months): Initial diagnostics, group formation, development of methodologies

"Practical stage" (6 months): Implementation of the proposed mechanisms in the experimental group, monitoring the process

"Analytical stage" (2 months): Analysis of the obtained data, generalization of the results

"Conclusion stage" (1 month): Development of methodological recommendations, formalization of the results

Methodology: The following practical mechanisms were developed and used during the study:

1. "System of gradually increasing complexity of group tasks":

Stage 1: Simple consensus-building tasks (for example, "Development of group rules")

Stage 2: Problem-solving tasks (for example, "Identification of a problem on campus and proposal of a solution")

Stage 3: Complex project tasks (for example, "Development and implementation of a social project")

2. **Mechanisms for structuring group discussion**:

"Brainstorming" - recording all ideas

"Argument tree" - visual representation of the main idea and its supporting arguments

"Position map" - placement of different points of view and showing the connections between them

3. "Mechanism for distributing roles among group members":

Moderator (directing the discussion)

Analytical (analyzing data)

Critical (identifying errors and shortcomings)

Synthesizer (combining different ideas)

Summarizer (forming a final conclusion)

4. "Mechanisms of reflective analysis":

"Group self-assessment" sessions

"My best idea" - each member identifies their most important contribution

"If we started over" - discussing opportunities to improve the past process

5. "Mechanisms for managing cognitive conflicts":

Result: The results of the study showed the following percentages:

Increase in the level of using logical arguments in group discussions: 42%

Increase in the ability to comprehensively analyze problems: 38%

Development of the ability to draw conclusions taking into account opposing points of view: 45%

Increase in the level of rationality of collective decisions: 40%

Increase in communicative effectiveness in the group: 44%

Development of the ability to reflect on the analysis: 41%

Increase in the level of combining creative and rational solutions: 39%

Increase in the ability to balance independent and group thinking: 43%

Results and discussion: The results obtained show that the systematic application of the proposed practical mechanisms led to a significant development of students' rational thinking through collaborative group activities. The highest dynamics were observed in the ability to draw conclusions taking into account opposing points of view (45%) and in the ability to balance independent and group thinking (43%). This indicates the importance of group cooperation in harmonizing individual and collective thinking. A 42% increase in the level of using logical arguments in group discussions indicates an improvement in students' ability to justify their opinions. An increase in communicative effectiveness in the group by 44% indicates the development of effective communication skills. A 41% increase in the ability to reflect on the ability to analyze students' own and others' thinking processes. Comparative analysis shows that in the experimental group, a significant difference was observed in all indicators compared to the control group (p<0.01). The results obtained fully revealed the potential of group cooperation in developing rational thinking and confirmed the effectiveness of the proposed mechanisms.

Conclusion:

The following main conclusions were drawn as a result of the study:

1. Group collaboration is an effective means of developing students' rational thinking, combining the advantages of individual and collective thinking.

2. The proposed practical mechanisms - a system of gradually increasing complexity of tasks, structuring group discussion, distribution of roles, reflexive analysis and management of cognitive conflicts - have proven their effectiveness.

3. The development of rational thinking through group collaboration contributes to the development of not only cognitive, but also communicative and social skills.

4. The mechanisms developed during the study have a universal nature that can be used at different stages of education and in teaching subjects.

5. When organizing group collaboration, it is important to balance individual and group results, ensure the active participation of each student, and systematically conduct reflexive analysis.

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