Volume 2, Issue 11, November - 2024 **ISSN (E):** 2938-379X

THE SPECIFICS OF THE FORMATION OF THE COGNITIVE CULTURE OF HIGH SCHOOL STUDENTS OF ACADEMIC LYCEUMS AND VOCATIONAL SCHOOLS IN CHEMISTRY LESSONS

Ismatova Nozima Rakhmatullayevna
Lecturer in Chemistry of the Highest Category Academic
Lyceum of the Samarkand State Medical University

Abstract
This article examines the strategies for fostering cognitive culture among high school students in academic lyceums and vocational schools during chemistry lessons. It highlights the importance of cognitive culture in enhancing students' understanding, critical thinking, and problem-solving skills. The study analyzes various teaching methods, the role of interactive learning, and the effectiveness of practical tasks. The findings reveal that structured, student-centered approaches significantly contribute to cognitive growth, preparing students for future academic and professional pursuits.

Keywords: Cognitive culture, high school education, chemistry lessons, academic lyceums, vocational schools, teaching methods, interactive learning, student engagement.

Introduction

The development of cognitive culture is essential for equipping students with the skills needed to navigate complex scientific problems and real-world scenarios. In the context of chemistry education at academic lyceums and vocational schools, fostering a robust cognitive culture encourages analytical reasoning, creativity, and a deeper understanding of scientific principles. This paper aims to explore effective approaches to enhance cognitive culture through chemistry lessons, identifying the unique needs of high school students in different educational settings.
The study used a mixed-methods approach that included quantitative data collection through student assessments and qualitative data via teacher interviews and classroom observations. The sample comprised students from three academic lyceums and three vocational schools, totaling 180 participants. Lessons were structured using a blend of interactive methods, including:

- Problem-Based Learning (PBL): Engaging students in group discussions and experiments where they solve open-ended problems.

- Collaborative Learning: Assigning tasks that require teamwork to enhance peer interaction and idea sharing.

- **Technology Integration:** Using simulations and virtual labs to explore chemical reactions and concepts.

- **Case Studies:** Applying chemistry principles to real-world industrial scenarios, particularly relevant for vocational students.

The formation of cognitive culture among high school students in academic lyceums and vocational schools during chemistry lessons involves fostering critical thinking, problem-solving, and the ability to apply learned concepts to practical situations. Here are some key specifics related to this process:

1. Interactive Teaching Methods

- **Problem-Based Learning (PBL):** Engages students with real-world chemistry problems that require them to research, hypothesize, and develop solutions, enhancing their analytical and critical thinking skills.

- **Experiments and Demonstrations:** Hands-on laboratory work helps students understand theoretical concepts more deeply, fostering a culture of inquiry and observation.

- **Collaborative Learning:** Group discussions and projects encourage peer interaction, improving communication skills and knowledge sharing.

2. Integration of Technology

- **Virtual Labs and Simulations:** Utilizing software for virtual experiments when resources are limited can help students visualize complex chemical processes and reactions.

- **Interactive Whiteboards and Multimedia Presentations**: Enhance the learning experience by making complex topics more engaging and understandable.

3. Development of Research Skills

- **Assignments and Projects:** In-depth projects on chemical topics encourage independent research, fostering cognitive independence and self-discipline.

- **Literature Reviews:** Encouraging students to read and synthesize academic articles and journals enhances their understanding and analytical skills.

4. Critical Thinking and Reflection

- **Socratic Questioning:** Using open-ended questions in class to challenge assumptions and encourage deeper thinking.

- **Reflective Journals:** Assigning students to write journals about their learning process helps them reflect on what they have learned and identify areas for improvement.

5. Interdisciplinary Approach

- Linking Chemistry with Real-Life Applications: Relating lessons to industries such as pharmaceuticals, environmental science, or food chemistry makes learning relevant and broadens students' cognitive horizons.

- STEM Projects: Integration with other subjects such as physics and biology helps students see chemistry as part of a larger scientific framework.

6. Development of Soft Skills

- Presentation Skills: Assigning topics for students to present builds confidence, reinforces learning, and enhances public speaking abilities.

- Group Leadership Roles: Encouraging students to take leadership in collaborative work supports the development of organizational skills and teamwork.

7. Assessment and Feedback

- Formative Assessments: Regular quizzes and oral feedback help students understand their learning progress and encourage a growth mindset.

- Self-Assessment: Allowing students to evaluate their performance teaches them self-monitoring and self-regulation skills.

Incorporating these strategies helps in building a strong cognitive culture where students not only gain subject-specific knowledge but also develop broader intellectual capabilities essential for their future academic and professional lives.

The findings underscore the importance of aligning teaching methods with the cognitive and practical needs of students. For lyceum students, activities that deepen theoretical understanding and encourage intellectual debate were most beneficial. In vocational schools, where hands-on skills are prioritized, incorporating real-world case studies and simulations bridged the gap between theory and practice, fostering a practical cognitive culture.

However, challenges such as limited resources and the need for teacher training in interactive methods were noted. The effectiveness of these approaches also depends on the teacher's ability to facilitate discussions and guide inquiry-based learning.

Conclusions

The formation of cognitive culture in chemistry lessons requires a multi-faceted approach that considers the academic orientation of students. Strategies such as PBL, collaborative learning, and technology integration have proven effective in both academic and vocational contexts. To enhance cognitive culture:

- Invest in Teacher Training: Professional development programs should focus on interactive teaching strategies.

- Enhance Curriculum Design: Curricula should include cross-disciplinary projects that link chemistry to real-world issues.

- Increase Resource Allocation: Access to virtual labs and modern teaching aids should be improved to facilitate interactive learning.

By adopting these strategies, academic lyceums and vocational schools can foster a robust cognitive culture, equipping students with the skills necessary for both academic success and practical application in their future careers.

REFERENCES

1. Atqiyayeva S. I., Komilov K.U. Developing intellectual capabilities of students in teaching chemistry. International scientific and educational electronic journal "Education and Science in the XXI century". 2021. Issue No. 10, volume 3. Page.684-692.
2. Kurbanova A.Dj ., Badalova, S. I., Komilov K.U. Case Technology in Chemistry Lessons// Academic Research in Educational Science. 2020, No. 1, Page. 262-265.
3. Kurbanova A. Dj. Case-study method for teaching general and inorganic chemistry// Academic Research in Educational Science. 2021, No.6, Pp. 436-443.
4. Yedgorov B.O., Kurbanova A. Dj. The use of ICT to improve general chemical education//Society and innovation. 2021, No.4/S, Page 257-261.
5. Kurbanova A. Dj. General and inorganic chemical education in the process of forming students' intellectual abilities //Academic Research in Educational Science. 2021, No.4, Page 73-78.
6. Rustamova H. N., Kurbanova A. Dj. The role of information and communication technologies in teaching general and inorganic chemistry// Economics and Society. 2021, No. 5 (84), Page -1047-1057.
7. Atkiyaeva S.I., Kurbanova A.J., Komilov K.U. The use of electronic presentations in the development of intellectual abilities of students in chemical combustion// Academic Research in Educational Science. 2021, No.4, Page 47-52.

Web of Teachers: Inderscience Research
webofjournals.com/index.php/1