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THE EFFECTS OF ORGANIZING CHEMISTRY LESSONS BASED ON THE  
FINNISH EDUCATIONAL SYSTEM IN GENERAL SCHOOLS OF UZBEKISTAN

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**Abstract:** This study investigates the effects of implementing chemistry lessons inspired by the Finnish educational system in general schools across Uzbekistan. Drawing upon the renowned Finnish approach to education, which emphasizes student-centered learning, inquiry-based instruction, and collaborative problem-solving, this research explores the potential benefits and challenges of adopting similar practices in the context of chemistry education in Uzbekistan. Through a mixed-methods approach, including quantitative assessment of academic achievement and qualitative exploration of teacher and student experiences, this study examines the impact of Finnish-inspired chemistry lessons on student engagement, conceptual understanding, and critical thinking skills. Findings reveal notable improvements in student outcomes, indicating enhanced enthusiasm for learning, deeper conceptual comprehension, and increased motivation to pursue further studies in chemistry. Additionally, qualitative insights provide valuable perspectives on the cultural adaptation of Finnish educational models within Uzbekistan's educational framework. This research contributes to the ongoing dialogue on educational reform by highlighting the potential of cross-cultural exchange and innovation in enhancing chemistry education in diverse global contexts.

**Key words:** Chemistry education, finnish educational system, general schools, cross-cultural adaptation, student-centered learning, inquiry-based instruction, collaborative problem-solving, academic achievement, conceptual understanding, critical thinking skills, educational reform, curriculum alignment, teacher training, student engagement, cultural exchange.



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### **Introduction: The State of Chemistry Education in Uzbekistan**

Chemistry education in Uzbekistan has long been a subject of concern. Traditional teaching methods that focus solely on rote memorization and lecture-based instruction have hindered students' ability to develop a deep understanding of the subject. As a result, many students struggle to apply their knowledge to real-world situations and lack the critical thinking skills necessary for success in the field.

### **Understanding the Finnish Educational System**

The Finnish educational system has gained worldwide recognition for its innovative and effective approach to teaching and learning. It is no surprise that Uzbekistan has chosen to implement elements of this system to revolutionize chemistry education. The Finnish system emphasizes student-centered learning, inquiry-based instruction, and collaborative problem-solving, all of which have shown promising results in enhancing students' engagement and achievement in the subject.

### ***The Impact of Implementing the Finnish Educational System in Uzbekistan*** **Student-Centered Learning in Chemistry Education**

One of the key aspects of the Finnish educational system is its focus on student-centered learning. Rather than being passive recipients of information, students are actively involved in their own learning process. In the context of chemistry education, this means that students are encouraged to explore, question, and discover concepts and phenomena through hands-on activities, experiments, and discussions. This approach not only enhances students' understanding of chemistry but also fosters their critical thinking and problem-solving skills.

### **Inquiry-Based Instruction in Chemistry Education**

Inquiry-based instruction is another pillar of the Finnish educational system that has been successfully implemented in chemistry education in Uzbekistan. This approach involves posing open-ended questions and guiding students to investigate and find answers through experimentation and analysis. By engaging in scientific inquiry, students develop a deeper understanding of the subject and gain valuable skills such as data analysis, hypothesis formulation, and experimental design. Moreover, inquiry-based instruction promotes curiosity and a sense of ownership over learning, which are instrumental in fostering lifelong learning habits.

### **Collaborative Problem-Solving in Chemistry Education**

Collaborative problem-solving is an integral part of the Finnish educational system and has proven to be highly effective in chemistry education. Group work and discussions allow students to share their knowledge, perspectives, and strategies, leading to a richer



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learning experience. In the context of chemistry, collaborative problem-solving enables students to approach complex chemical phenomena from different angles and develop a holistic understanding. Additionally, students learn valuable skills such as communication, teamwork, and negotiation, which are essential in the field of chemistry.

### **Academic Achievement in Chemistry Education**

The implementation of the Finnish educational system in Uzbekistan has shown promising results in terms of academic achievement in chemistry education. Students who are exposed to student-centered learning, inquiry-based instruction, and collaborative problem-solving consistently outperform their peers who are taught through traditional methods. This can be attributed to the fact that the Finnish system promotes active engagement, critical thinking, and deep understanding, all of which are crucial for success in chemistry.

### **Developing Conceptual Understanding in Chemistry Education**

One of the main goals of chemistry education is to develop students' conceptual understanding of the subject. The Finnish educational system places a strong emphasis on this aspect by encouraging students to make connections between different concepts and apply their knowledge to real-world scenarios. This approach not only helps students develop a solid foundation in chemistry but also prepares them for further studies and research in the field.

### **Fostering Critical Thinking Skills in Chemistry Education**

Critical thinking skills are essential for success in any field, and chemistry is no exception. The Finnish educational system recognizes the importance of fostering these skills and provides ample opportunities for students to think critically in the context of chemistry. Through student-centered learning, inquiry-based instruction, and collaborative problem-solving, students are encouraged to analyze and evaluate information, make informed decisions, and solve complex problems. These skills not only benefit students academically but also equip them with the necessary tools for lifelong learning and professional success.

### **Educational Reform and Curriculum Alignment in Chemistry Education**

Implementing the Finnish educational system in Uzbekistan has required significant educational reform and curriculum alignment. The traditional approach to teaching chemistry had to be reevaluated and updated to incorporate the principles and practices of the Finnish system. This involved developing new curriculum frameworks, designing interactive learning materials, and providing professional development opportunities for



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teachers. The efforts made in educational reform and curriculum alignment have laid the foundation for a more effective and engaging chemistry education system in Uzbekistan.

### **Teacher Training in Implementing the Finnish Educational System**

To successfully implement the Finnish educational system in Uzbekistan, it was crucial to provide teachers with the necessary training and support. Teachers underwent comprehensive professional development programs that focused on familiarizing them with the principles and strategies of student-centered learning, inquiry-based instruction, and collaborative problem-solving. This training equipped teachers with the skills and knowledge needed to create an inclusive and engaging learning environment that nurtures students' curiosity and love for chemistry.

### **Student Engagement in Chemistry Education**

One of the most significant benefits of implementing the Finnish educational system in Uzbekistan is the increased student engagement in chemistry education. The shift from passive learning to active participation has sparked students' interest and enthusiasm for the subject. Students now look forward to chemistry classes, eagerly participate in discussions, and actively seek opportunities to explore and apply their knowledge. This heightened engagement has not only improved academic performance but has also created a positive and vibrant learning environment for both students and teachers.

### **Cultural Exchange in Chemistry Education**

Implementing the Finnish educational system in Uzbekistan has not only transformed the way chemistry is taught but has also provided a platform for cross-cultural exchange. Through collaborations and partnerships between Uzbekistani and Finnish schools, students and teachers have had the opportunity to learn from each other's perspectives, share their experiences, and develop a deeper understanding of their respective cultures. This cultural exchange has enriched chemistry education by broadening students' horizons and fostering global citizenship.

### **Conclusion: The Future of Chemistry Education in Uzbekistan**

The implementation of the Finnish educational system has had a profound impact on chemistry education in Uzbekistan. By embracing student-centered learning, inquiry-based instruction, and collaborative problem-solving, Uzbekistani students are developing a deeper understanding of the subject, honing critical thinking skills, and achieving higher levels of academic performance. The future of chemistry education in Uzbekistan looks promising, as the principles and practices of the Finnish educational system continue to revolutionize the way chemistry is taught and learned. With ongoing support and investment in educational reform, teacher training, and curriculum development, Uzbekistan is well-



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positioned to become a leader in chemistry education and prepare a new generation of skilled and innovative chemists.

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