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APPLICATION OF INQUIRY-BASED LEARNING BY KAZAKHSTANI INSTRUCTORS IN THE CLASSROOM

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Abstract. The article "Research on the use of research learning by Kazakh teachers in the classroom" examines the use of research learning in educational institutions in Kazakhstan. The authors describe the experience of teachers in applying this teaching method, the features of its use, as well as the advantages and disadvantages of this approach. The article concludes that research learning can be an effective way to increase student motivation and develop their creative skills, which, in turn, will significantly affect the quality of education.

Keywords: inquiry-based learning, physics classroom, methodology, teacher.

Introduction. Currently, more and more attention is paid to improving the educational process. Kazakh teachers also turned out to be interested in using modern teaching methods, including research learning. Exploratory learning is an approach to learning in which students actively engage in research on a particular topic and then present their findings. The main idea is that students should become active participants in the learning process instead of passive listeners. Kazakh teachers have already proven that research-based learning produces good results. To begin with, this approach to the learning process motivates students to take their studies more seriously, because some of the tasks and projects that they complete as part of research learning require hard work and responsibility. In addition, research learning helps to develop not only knowledge, but also skills and abilities, such as the skill of collecting and analyzing information, the skill of communication and cooperation, the skill of critical thinking and problem solving. Teachers also see that in order to successfully use exploratory learning, it is necessary to develop clear methods and correctly structure tasks. It is equally important that students are motivated and have enough time to complete assignments. In addition, an important aspect is the choice of high-quality materials and technologies that will improve learning, making it accessible to everyone. From the point of view of education developers, the use of research learning should be part of the strategy for developing the education system in Kazakhstan. This learning approach can help to actively engage students in the learning process, develop their creative skills and abilities, and prepare them for the challenges of the future. Investigative learning is undoubtedly an important part of modern education. Despite the fact that at the moment Kazakh teachers are just beginning to apply this approach in the classroom, the results of their research show that

this is an effective teaching method that allows you to form not only knowledge, but also develop the skills and abilities of students. It has been observed that teachers with a positive attitude towards science teach adequately and use active participation and student-centered approaches [1]. Inquiry-based learning is an active learning approach that encourages students to learn through exploration and discovery. In Kazakhstan, the Ministry of Education and Science has introduced inquiry-based learning as a new approach to teaching science in schools. The aim of this article is to explore how Kazakh teachers introduce inquiry-based learning to physics classes.

Research questions:

- How Kazakh teachers introduce inquiry-based learning to physics classes?
- Problems and solutions faced by teachers in preparing for lessons?
- The effect of IBL on studies in physics classroom?

Literature Review and Theoretical Framework

Inquiry-based learning is a teaching approach that promotes student-centered and active learning, where students construct their knowledge through investigation, experimentation, and problem-solving [2,3]. In physics education, IBL has been shown to improve students' understanding of concepts, increase their problem-solving skills, and enhance their motivation [4]. Several studies have explored the application of IBL in physics education in different countries, including Kazakhstan. In a study conducted by Sultangazina, Yembayeva, and Kozhamzharov, Kazakhstani physics teachers were trained to apply IBL in their classrooms, resulting in an improvement in students' understanding of concepts and problem-solving skills. Another study conducted by Balgynbekova and Kurakbayev investigated the effectiveness of IBL in enhancing students' motivation and found that IBL significantly increased students' interest and engagement in physics classes. Theoretical frameworks that support the use of IBL in physics education include constructivism and cognitive load theory. Constructivism assumes that learners actively construct their knowledge through interactions with the environment. IBL supports this theory by providing opportunities for students to explore and construct their knowledge through inquiry-based activities. Cognitive load theory proposes that learning is facilitated when instructional materials are presented in a way that reduces cognitive overload and matches the learner's cognitive capacity. IBL reduces cognitive overload by breaking down complex concepts into smaller components that students can investigate and understand. Moreover, social constructivism emphasizes the importance of collaborative learning in which students interact with their peers through discussions to construct knowledge. IBL is particularly useful in promoting social constructivism by providing students with opportunities to work in groups and actively engage with their peers in scientific inquiry.

Methodology. Inquiry-based learning is an active learning approach that encourages students to learn through exploration and discovery. In Kazakhstan, the Ministry of Education and Science has introduced inquiry-based learning as a new approach to teaching science in schools. A test was taken from two classes in order to determine the level of education of the whole class. One experimental and traditional teaching work was carried out for 12 weeks. During the preparation for the lesson, the following problems

appeared. These types of problems were appeared during the experiment: lack of time, limited resources, inadequate training, lack of motivation. Because during this experiment we realized that we often have limited time to prepare for lessons as we had to juggle multiple tasks such as grading, meetings, and administrative work. Sometimes this led to rushed lesson planning and inadequate preparation. At first it was hard to change traditional lessons into inquiry-based lessons as there was still not enough skills and knowledge required to plan effective lessons or integrate new teaching methods into their teaching practice. In order to solve these problems I asked advice from my colleagues to share their experience in methodology, then we found these tips helpful and effective to make lesson plans and get along with time management. Tips: time management, resource sharing, professional development, motivation strategies

Participants and Instrument

A survey was conducted among 50 physics teachers in Kazakhstan that works in Bilim-Innovation lyceums in south region to determine their knowledge and use of inquiry-based learning. The survey consisted of closed and open-ended questions about the teachers' perception of inquiry-based learning, its implementation, and its effectiveness.

Conclusion. The survey results showed that the majority of teachers were familiar with the concept of inquiry-based learning but lacked a clear understanding of how to implement it effectively. Most teachers believed that inquiry-based learning was effective in improving students' critical thinking, problem-solving, and analytical skills.

However, they faced several challenges when introducing inquiry-based learning. These challenges included a lack of time, inadequate resources, a lack of training, and the need for curriculum alignment. Despite these challenges, many teachers reported that they were motivated to continue using inquiry-based learning as it was an engaging and rewarding approach to teaching physics.

Inquiry-based learning is a new approach to teaching science in Kazakhstan, and it is being introduced to physics classes across the country. The survey results showed that many teachers were enthusiastic about the approach, but implementation challenges still needed to be addressed. With more support and training, inquiry-based learning has the potential to significantly improve the quality of science education in Kazakhstan. IBL is a highly effective teaching approach that has been shown to benefit students in many ways. By focusing on inquiry and discovery, students are better able to understand complex physics concepts, become more engaged in their learning, and develop essential scientific skills for the future. IBL is a promising teaching approach that can enhance the quality of physics education in Kazakhstan. The theoretical frameworks of constructivism, cognitive load theory, and social constructivism provide a strong foundation for the application of IBL in classrooms. Further research is needed to explore the factors that influence the successful implementation of IBL in physics education and to develop effective training programs for teachers.

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ИССЛЕДОВАНИЯ ПРИМЕНЕНИЯ ИССЛЕДОВАТЕЛЬСКОГО ОБУЧЕНИЯ КАЗАХСТАНСКИМИ ПРЕПОДАВАТЕЛЯМИ В КЛАССЕ

Аннотация. Статья "Исследование применения исследовательского обучения казахстанскими преподавателями в классе" рассматривает вопросы использования исследовательского обучения в образовательных учреждениях Казахстана. Авторы описывают опыт преподавателей в применении этого метода обучения, особенности его использования, а также преимущества и недостатки этого подхода. В статье делается вывод о том, что исследовательское обучение может стать эффективным способом повышения мотивации учащихся и развития их творческих навыков, что, в свою очередь, существенно повлияет на качество образования.

Ключевые слова: обучение на основе запросов, класс физики, методика, учитель.

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ҚАЗАҚСТАН МҰҒАЛІМДЕРІНІҢ ЗЕРТТЕУШІЛІК ОҚЫТУДЫ САБАҚТА ПАЙДАЛАНУЫ ТУРАЛЫ ЗЕРТТЕУЛЕР

Аңдатпа. «Қазақстан мұғалімдерінің зерттеушілік оқытуды сабақта пайдалануы туралы зерттеулер» мақаласында Қазақстандағы оқу

орындарында зерттеушілік оқытуды пайдалану қарастырылған. Авторлар мұғалімдердің осы оқыту әдісін қолдану тәжірибесін, оны қолдану ерекшеліктерін, сонымен қатар бұл әдістің артықшылықтары мен кемшіліктерін сипаттайды. Мақалада зерттеушілік оқыту оқушының ынтасын арттырудың және олардың шығармашылық қабілеттерін дамытудың тиімді жолы бола алады, бұл өз кезегінде білім сапасына айтарлықтай әсер етеді деген қорытындыға келеді.

Тірек сөздер: сұраныстарға негізделген оқыту, физика сыныбы, әдістеме, мұғалім.