experiments, how to conduct them and their advantages in use. The significance of chemical calculations in chemical experiments is described. The place of experimental qualification in the teaching of chemistry is indicated. After a comprehensive description of the chemical experiment, its contribution to students and chemical science is described. After a comprehensive description of the chemical experiment, its contribution to students and chemical science is described. Teaching students the process of conducting a chemical experiment, a story about the features of conducting a chemical experiment in the educational methodology, the scope of its application, the method of conducting. The effectiveness of chemical experiments in the process of studying chemical sciences and chemical education is described.

Keywords: *chemical experiment, demonstration experiment, heuristic function, hypothesis, experimental report, competence, methodology.*

Роль и значение химического эксперимента в химическом образовании

КЕРИМБАЕВА К.З.- *к.х.н., доцент, Южно-Казахстанский государственный педагогический университет, Шымкент/Казахстан, ORCID:0000-0001-8902-9958 e-mail: kulyash_62@mail.ru*
УСЕНБАЙ А.У. - *магистр преподаватель, Южно-Казахстанский государственный педагогический университет,Шымкент/Казахстан,ORCID:https://orcid.org/0000-0003-4696-6663 e-mail:ayash.usenbaj@bk.ru*
МАТИР А.У. *студент, Южно-Казахстанский государственный педагогический университет, Шымкент/Казахстан, ORCID:https://orcid.org/0009-0009-1409-9877 e-mail: Mtr03@list.ru*

Аннотация. *В данной статье показаны важность и роль химического эксперимента в химическом образовании. Определены методы и этапы проведения химических экспериментов. В то же время написано, что при обучении предмету химии будет повышаться умение правильно проводить опыты и решать экспериментальные задачи, подчеркивая эффективность химических опытов. После классификации важнейших функций химического эксперимента анализируется значение его функции. Сравнивая значение теории и эксперимента в химическом образовании, показано, что химический эксперимент совершенствует знания учащихся. Рассмотрены классификация химических экспериментов и особенности методики их проведения, описано их место в обучении химии. Она направлена на повышение исследовательской активности учащихся, показывая виды химических опытов, способы их проведения и их преимущества в использовании. Описано значение химических расчетов в химических экспериментах. Указано место экспериментальной квалификации в преподавании химии. После всестороннего описания химического эксперимента описывается его вклад для студентов и химической науки. Обучение учащихся процессу проведения химического эксперимента, рассказ об особенностях проведения химического эксперимента в учебной методике, области его применения, способе проведения. Описана эффективность химических экспериментов в процессе изучения химических наук и химического образования.*

Ключевые слова: *химический эксперимент, демонстрационный эксперимент, эвристическая функция, гипотеза, экспериментальный отчет, компетентность, методология.*

UDC: 378.147.88 https://vestnik.oqmpu.kz/kk
CSCSTI: 31.01.45

IMPROVING THE EFFECTIVENESS OF THE EDUCATIONAL PROCESS USING INTERACTIVE METHODS

BAIMAKHANOVA G.M. *- candidate of Chemical Sciences, Associate Professor, South Kazakhstan State University Pedagogical University, Shymkent, Kazakhstan, ORCID - https://orcid.org/0000-0002-8480-8562 e-mail:baimahan-gukanai@mail.ru*
KALI M. M. *– master, South Kazakhstan State Pedagogical University, Shymkent, Kazakhstan, ORCID- https://orcid.org/0000-0001-9666-4597 e-mail: kalievas.s@mail.ru*
ORYNBASAR I. - *master, South Kazakhstan State Pedagogical University, Shymkent, Kazakhstan, ORCID- https://orcid.org/0009-0004-2397-1691 e-mail: indira.orynbasar.2000@mail.ru*

Abstract. *This article considered the pressing issue of enhancing cognitive activity in high school students with the use of interactive teaching methods. To gain a better understanding of the topic, the article presents a brief overview of the theoretical background, as well as the results of a limited research study. It provides a general concept of interactive methods of learning, the objectives they aim to achieve, and the principles they are based on. The exact process of facilitating an interactive lesson is carefully planned out. The nature of the material that is covered during each stage is*

specified. For each topic discussed, there is a set of intellectual challenges devised to foster the development of critical and imaginative thinking, as well as the construction of mental operations, visualization, and the linking of ideas. In order to enhance the knowledge acquisition of students, a thorough analysis of the effectiveness of interactive teaching methods was conducted. This analysis included researching the impact of these methods on the critical processing of new educational material presented in the lecture. Results showed that incorporating interactive teaching techniques into the pedagogical educational programs of universities could greatly enhance students' abilities to critically process new information. For the purposes of the experiment, strategies of observation, dialogue, and inquiry were employed. Based on the findings of the study, a model has been put forward to enhance the intellectual capabilities of learners through interactive teaching approaches and suitable advice has been provided.

Keywords: *Interactive teaching methods, teaching technologies, active learning methods, pedagogical technology, interactive board.*

Introduction. Kazakhstan's higher education system, which is developing in the conditions of modern market relations, particularly defines the principle of taking into account the interests of students as one of the priority areas for successfully solving the tasks of training qualified personnel.

For university curriculum to truly provide professional competence, it needs to be supplemented by teaching methods that go beyond the traditional forms of education. These methods should be designed to give students the necessary comprehensive knowledge and skills to be successful in their chosen field. Examples of such methods include discussions, problem solving, simulations, and other forms of experiential learning. By incorporating these methods into the curriculum, universities can ensure that their students are equipped with the knowledge and skills necessary to be successful in their professional lives. In today's educational landscape, the challenge of stimulating students' cognitive abilities is of the utmost importance. Kazakhstani university instructors must therefore strive to enhance and introduce teaching methods that would encourage students to express their creativity and ignite their enthusiasm for learning. Simultaneously, the educational mission of developing the personality of a citizen in the Republic of Kazakhstan, as well as their moral values and beliefs, must be achieved, since the academic life at university is the main element in the learning process of every individual.

Currently, interactive technologies open up unique opportunities in various fields of professional activity, offer simple and convenient means to solve a wide range of tasks, including in the field of education.

The main task of education is to create conditions for the development of the educator, which will ensure in the future his readiness to live and act successfully in society.

Today, many methodological innovations are associated with the use of interactive teaching methods[3].

The purpose and tasks of the work. Exploring the potential of interactive teaching methods to boost cognitive activity in students enrolled in pedagogical educational programs, this research seeks to provide theoretical justification and practical analysis of the matter.

In connection with this goal, the following tasks were set:

- determining the relevance of the research topic;
- to conduct a scientific and theoretical analysis of the considered teaching methods and their classification;
- to reveal the importance of teaching methods in improving the cognitive activity of students in pedagogical educational programs;
- to determine the own algorithm for conducting an interactive lesson[1].

Successful learning in high school involves more than just strong knowledge; it also involves the ability to apply that knowledge in various contexts, self-directed learning, and the development of experience in dealing with difficult situations. Subsequently, students must have cognitive activity and independence in order to facilitate this. To this end, a pedagogical environment must be created that encourages cognitive engagement. This requires the systematic use of educational technologies in the learning process. Active and interactive teaching methods can be used to achieve this goal, as they both share the same purpose of enhancing cognitive interest and engagement among students.

The main difference between these two methods is that active teaching involves a connection between the teacher and the student while interactive methods involve interplay between both the teacher and the student as well as amongst the students themselves. Thus, interactive teaching methods are especially useful as they are able to generate enthusiasm for the subject, improve the assimilation of educational material, and cultivate behavioral models, knowledge, motivation, team-building, and the freedom of expression among students[2].

Materials and methods. The educational process based on the use of interactive teaching methods is organized taking into account the involvement in the process of cognition of all students without exception. The word "Interactiv" from English also means this concept: "inter" means "mutual", and "act" means "to act", which means that interactive methods are methods that recognize the interaction between the teacher and the learner as the basis of learning and create conditions for such a relationship. Joint activity means that everyone makes their own special individual contribution, in the course of work there is an exchange of knowledge, ideas, ways of activity[8]. Individual, pair and group work are organized, project work, role-playing games are used, work with documents and various sources of information is carried out. Interactive methods are based on the principles of interaction, activity of trainees, reliance on group experience, mandatory feedback. An environment of educational communication is created, which is characterized by openness, interaction of participants, equality of their arguments, accumulation of joint knowledge, the possibility of mutual evaluation and control.

"Interactive methods" means methods characterized by a two-way exchange of information between students and the teacher, and contributing to a more active and creative work of students, revealing their potentials. Unlike active methods, interactive ones are focused on broader interaction of students not only with the teacher, but also with each other. The teacher's place in interactive classes is reduced to the direction of the students' activities to achieve the objectives of the lesson.

Interactive teaching methods involve co-learning, and both students and the teacher are subjects of the educational process. The teacher often acts only as an organizer of the learning process, an assistant, a creator of conditions for the initiative of students[3].

The teacher, together with new knowledge, leads the participants of the training to an independent search. The activity of the teacher gives way to the activity of students, his task becomes to create conditions for their initiative. The teacher refuses the role of a kind of filter that passes through the educational information, and performs the function of an assistant in the work, one of the sources of information. Therefore, interactive learning is intended to be initially used in intensive training of sufficiently adult students.

Interactive learning motivates the process of learning knowledge to the organization:

1) provide an opportunity for all students to actively participate in the process of joint cognition.

2) give each student the opportunity to share their knowledge, discuss them together and reflect on them.

3) creating an environment in which students independently construct knowledge.

In interactive learning, students learn the following knowledge, skills[4]:

- Develop deep thinking, personal reflexive abilities
- Analyze and evaluate your ideas and actions
- Independently understand the information, weigh it and choose the right one from it
- Comprehensive information analysis
- Formation of new ideas and knowledge independently
- Formation of personal values and beliefs in the learning process and following an active life position (outlook, worldview)
- Argue your opinion with your thoughts by participating in discussions
- Consider alternative opinions in another

- Decision-making and solving complex problems
- Build effective relationships with others, interact
- Adoption of spiritual and moral rules of joint work with a team of students
- The student perceives the group as a collective.

The main principles and purposes of interactive learning are presented in Table 1.

Table 1. Basic principles and purposes of interactive learning[3, 9**]**

Principles	Purposes
Formation of the environment	- creating conditions under which the student feels the fruitfulness of his actions in training; - establishment of open, free, creative relations between students; -not to transfer knowledge to students in a ready-made form, but to direct them to search;
Learning through Action	- to prove to students that knowledge is acquired effectively only through their own actions; - to teach students active subjects and organize their activities for the assimilation of knowledge.
Connection with life	- to base learning on practical actions, to consider the subject as a solution to problems that arise in everyday life.
Instilling independence	-not satisfying the ready answers of the students, encouraging them to mentally build their own opinion, to find the answer in solving the problem from their own point of view (if the student cannot answer, does not give the correct answer himself, contributes to his search by other students); - to form students critical and analytical thinking skills (to doubt, to strive for independent understanding, to see different meanings in information, to provide evidence).

Thus, by applying interactive teaching methods in the learning process, we can generally achieve[5]:

1. To form the ability to understand the content of the topic under consideration, its basic concepts, cause-and-effect relationships, etc.

2. Formation of evaluation activity: discussion of own activities and self-assessment, suggestions of other students, etc.

3. The development of cognitive abilities, i.e. the development of all elements of cognitive activity of students-thinking, perception, memory, attention, imagination.

4. Development of oral and written speech.

5. Development of communication and organizational skills.

From the theoretical review above, we see that interactive teaching methods can give us a huge benefit.

Currently, methodologists and practical teachers have developed many forms of group work. The most famous of them are the **"big circle", "turntable", "aquarium", "brainstorming", "debate"**.

These forms are effective if any problem in general is discussed in the lesson, about which students have initial ideas received earlier in the classroom or in everyday experience. In addition, the topics discussed should not be closed or very narrow. So, for example, there is no point in a group discussion of what the penalty for embezzlement should be or what the tax rate should be. It is also important that the level of the problem under discussion makes it possible to move from narrowly economic (legal, political, etc.) issues to a broad statement of the problem. This problem should be relevant, interesting and meaningful for students.

The simplest form of group interaction is the *"big circle"*. The work takes place in three stages.

The first stage. The group sits on chairs in a large circle. The teacher formulates the problem.

The second stage. For a certain time (about 10 minutes), each student individually writes down on his sheet the proposed measures to solve the problem.

The third stage. In a circle, each student reads out his proposals, the group listens in silence (does not criticize) and votes on each item - whether to include it in the general decision, which is fixed on the blackboard as the conversation progresses[10].

The "big circle" technique is optimal in cases where it is possible to quickly determine the ways to solve the issue or the components of this solution. With the help of this form, it is possible, for example, to develop draft laws or instructions, local regulatory legal acts.

"Aquarium" is a form of dialogue when students are invited to discuss a problem "in front of the public." A small group chooses the one to whom it can entrust to enter this or that dialogue on the problem. Sometimes it can be several willing. You and all the other students act as spectators. Hence the name of the reception - "aquarium".

This organizational technique gives students the opportunity to see their peers from the outside, that is, to see:

- how do they communicate,
- how do they react to someone else's thought,
- how to settle the brewing conflict,
- how they argue their point , etc .

Also, computer-assisted learning gives the learning process a novelty, changing its rhythm for self-learning of the group. All training is carried out with the help of computer programs and the Internet, which is texts or multimedia packages (audio, video, CD–ROMs, Internet, etc.)with a set of specific information questions and tasks. A good basis for starting a discussion, involving all participants in it, expressing their views, assessments, ideas, and consolidating the studied material is a video lesson using information technology. A variety of illustrative material, multimedia and interactive models raise the learning process to a qualitatively new level, since it is much more interesting for a modern student to perceive information in this form than with the help of tables, lectures, explanations. When using a computer, both in regular and binary lessons, the information is not static, not a voiced picture, but a dynamic video and sound order, which significantly increases the efficiency of mastering materials[3].

Interactive training is carried out using the following types of work and actions:

- ❖ Joint work (paired, group, with the whole class)
- ❖ Individual and joint research work
- ❖ Educational, role-playing and production (business) games
- ❖ Discussion

- ❖ Work with various sources of information (book, lecture, Internet, documents, museum, etc.)
- ❖ Creative works
- ❖ Study of real situations, analysis of specific situations, case study
- ❖ Presentation
- ❖ Computer training programs
- ❖ Trainings
- ❖ Interviewing
- ❖ Conducting a survey, discussion and analysis of its results
- ❖ Completion of any training activities with feedback, etc.[6]

Today, there are many options for classifying interactive learning methods. These classifications transform interactive methods from different points of view: by content, by application, by technological properties, etc. By the basis of the species division of interactive methods, we mean the classification of M. Novik (Table 2). [8, 23]

Table 2. Classification of interactive teaching methods (According to M. Novik)

Kinds	Forms
Not imitation	▪ Problem lectures ▪ Problem seminars ▪ Thematic group discussions ▪ Thinking (brainstorming) ▪ Round table ▪ Pedagogical game exercises
Imitations a) not in a game form	▪ Analysis of specific situations ▪ Simulation exercises ▪ Trainings
b) in a game form	▪ Role-playing games ▪ Business Games 1) *educational games* - blitz games - mini-games - gaming classes conducted on a computer 2) *production games* - problem-business games 3) *research games* - problem-business games

In a word, interactive teaching methods in the development of creative activity and cognitive activity are an indispensable opportunity. Because with this method, we will learn, and on the other hand, we will achieve the formation of creative personality qualities in future specialists. Thus, it is safe to say that these teaching methods are of particular importance for improving the quality of training of future teachers[10].

Research results and discussion. Interesting results were obtained by me when using the interactive method in a playful way, as a generalization of educational material and preparation for control work.

For the experiment, I selected two groups 1507-10 and 1504-10. In group 1507-10, we were preparing for the control work according to the standard scheme: we remembered the basic definitions, formulas in the lesson, solved tasks similar to those that will be on the control work.

In the 1504-10 grade, we held a thematic game on this topic. What we repeated in the lesson with the 1507-10 group, this group was asked to repeat independently as preparation for the game, and the tasks that we solved with the 1507-10 group in the lesson were processed by me and turned into tasks for the game.

After the control work, it turned out that the 1504-10 group, as a whole, was better prepared for work, there were significantly fewer "F" in this group than in 1507-10. Results of the control work of students are presented in Figure 1.

And this is understandable, because if in the first case, the student didn`t prepare, then he failed only himself, and in the second case, he can thereby fail the whole team. And, if we take into account the fact that at this age communication with peers and their opinion about your personality is very important for a teenager, then, therefore, this can explain a lot.

Thus, the use of such a form of collective creativity as a game in the lesson is very appropriate.

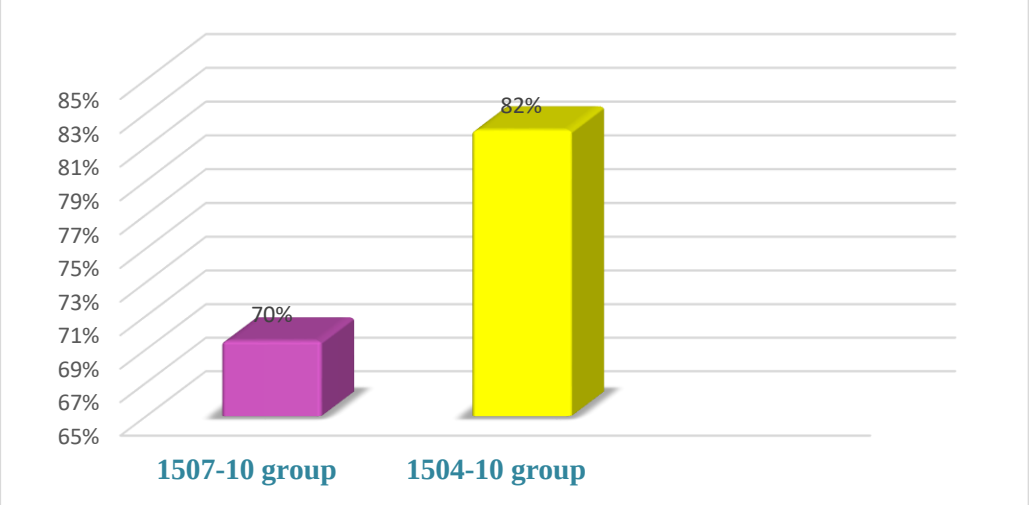

Figure 1 - Results of the control work of students

Also, the use of information and communication technologies in the classroom contributes to the creation of pedagogical, psychological conditions conducive to comprehensive learning, business and demanding, creative and free development of future generations.The requirements for a modern teacher intensively help the student in independent learning, arouse his interest in classes, only then the student strives to learn new things and strives to improve his knowledge. New pedagogical technologies occupy a wide place in general teaching systems. Today, conducting a lesson in a multimedia classroom, using a computer system in chemistry lessons facilitates the work of both teachers and students, increases the motivation of students[7]. The use of level tasks, drawings, visual aids in the classroom improves the perception of students. Conducting test work in chemistry lessons, performing level tasks, virtual laboratory work are performed by students with great interest. The results of tasks and test work performed in classes held in the multimedia room are checked at this moment, analyzed for each mistake made, time is used sparingly. The use of a computer system during integration classes is very effective. New words on the screen page, colorful grammar tables increase the interest of students, improve memory[9]. Classes held in a multimedia classroom can be conducted using the unique features of an interactive whiteboard.

Conclusion. The new pedagogical technology is of great importance for the development of the student as a mature personality. And this new technology is a distributor, a systematic user in his creative work, a propagandist - teacher. You are a teacher only if you know how to think in a new way. For this reason, great demands are placed on the distributor introducing the new technology. In

my opinion, the use of the above techniques in chemistry lessons, computer helps to activate and increase the interest of students in chemistry lessons, along with creative, acting, logical thinking skills. Therefore, the skill of each teacher will depend not only on the ability, but also the ability to conduct classes, but also fascinating, not limited to the textbook. The educational process passing through these technologies contributes to the formation of new thinking in the student, the development of creative abilities.

In conclusion, the following methodological recommendations were established to increase the cognitive activity of students through interactive learning:

- the form of Education organized through the studied teaching methods should be targeted, systematic for students of higher schools;
- interactive teaching methods must meet the requirements of the Higher School;
- in the process of organizing high school education, the didactic goal of each chosen method should be clear, and the conditions should be clear;
- the final part of each interactive training is mandatory;
- to increase the cognitive activity and independence of students, it is necessary to systematically apply interaction-oriented teaching methods;
- the teacher must be proficient in using interactive teaching methods.

References

1. The XI International Science Conference «Modern aspects of science and practice», November 30 – December 03, 2021, Melbourne, Australia. 64 p.
2. G.K. Nurkenova, A.A. Esmagulova. Okytudyn interbelsendi adister studentterdin tanymdyk belsendiligin arttyru kuraly retinde.// Kazak ulttyk kyzdar pedagogikalyk universitetinin Khabarshysy - № 4(88), - 2021. - 12 p. https://doi.org/10.52512/2306-5079-2021-88-4-7-18
3. Sbornik tezisov i statej. «Aktivnye i interaktivnye metody obuchenija i vospitanija kak sredstvo formirovanija kljuchevyh kompetencij obuchajushhihsja». Oblastnaja nauchno – prakticheskaja konferencija, s. Bol'shaja Glushica, 2019g. – S. 22-23
4. Alimov A.K. Interbelsendi adisterdi zhogary oku oryndarynda koldanu. Oku kuraly. Almaty. - 2009. – 263 p.
5. Mukaddas, A., & Nilufar, D. (2021). The use of interactive methods in teaching professional speech to students. Linguistics and Culture Review, 5(S2), 1122-1130. Scopus. https://doi.org/10.21744/lingcure.v5nS2.1801
6. Kashlev, S.S. Interaktivnye metody obuchenija. Uchebno-metodicheskoe posobie. Minsk: TetraSistems, 2013. – 134 s.
7. Mijerin' L.A., Bykova N.N., Zarukina E.V. Sovremennye obrazovatel'nye tehnologii v vuze: ucheb.metod. posobie. SPb: Izd-vo SPbGJeU. – 2015. -169 c.
8. N.A.Toibazarova. Interbelsendi okytu technologiyasy. Oku kuraly. Nur-sultan – 2019. – 7, 9 b.
9. Khan, S. (2011). New pedagogies on teaching science with computer simulations. Journal of Science Education and Technology, 20(3), 215–232. https://doi.org/10.1007/s10956-010-9247-2
10. Klarin M.V. Innovacionnye modeli obuchenija: Issledovanie mirovogo opyta. M.: Luch, 2016. 640 s

Интерактивті әдістерді қолдана отырып, білім беру процесінің тиімділігін арттыру

БАЙМАХАНОВА Г.М.*- х.ғ.к. доцент, Оңтүстік Қазақстан мемлекеттік педагогикалық университеті, Шымкент, Қазақстан,ORCID - https://orcid.org/0000-0002-8480-8562 e-mail:baimahan-qukanai@mail.ru*
ҚАЛИ М.М. *– магистрант, Оңтүстік Қазақстан мемлекеттік педагогикалық университеті, Шымкент, Қазақстан,ORCID- https://orcid.org/0000-0001-9666-4597 e-mail: kalievas.s@mail.ru*
ОРЫНБАСАР И.К. *– магистрант, Оңтүстік Қазақстан мемлекеттік педагогикалық университеті, Шымкент, Қазақстан,ORCID- https://orcid.org/0009-0004-2397-1691 e-mail: indira.orynbasar.2000@mail.ru*

Аңдатпа. *Бұл мақалада интерактивті оқыту әдістерін қолдана отырып, жоғары мектеп оқушыларының танымдық белсенділігін арттырудың өзекті мәселесі қарастырылған. Тақырыпты жақсырақ*

түсіну үшін мақалада теориялық негіздерге, сондай-ақ шектеулі зерттеу нәтижелеріне қысқаша шолу жасалады. Онда оқытудың интерактивті әдістерінің жалпы тұжырымдамасы, оларға бағытталған мақсаттар және олар негізделген принциптер берілген. Интерактивті сабақты өткізудің нақты процесі мұқият жоспарланған. Әр кезеңде қарастырылатын материалдың сипаты көрсетіледі. Талқыланатын әрбір тақырып үшін сыни және бейнелі ойлауды дамытуға, сондай-ақ ойлау операцияларын құруға, визуализацияға және идеяларды байланыстыруға ықпал ететін интеллектуалды міндеттер жиынтығы әзірленді. Студенттердің білім алуын жақсарту үшін интерактивті оқыту әдістерінің тиімділігіне мұқият талдау жасалды. Бұл талдау осы әдістердің дәрісте берілген жаңа оқу материалын сыни өңдеуге әсерін зерттеуді қамтыды. Нәтижелер университеттердің педагогикалық білім беру бағдарламаларына оқытудың интерактивті әдістерін енгізу студенттердің жаңа ақпаратты сыни тұрғыдан өңдеу қабілетін айтарлықтай арттыра алатынын көрсетті. Эксперимент мақсатында бақылау, диалог және сауалнама стратегиялары қолданылды. Зерттеу нәтижелеріне сүйене отырып, интерактивті оқыту тәсілдері арқылы оқушылардың интеллектуалдық қабілеттерін арттыру моделі ұсынылды және тиісті ұсыныстар берілді.

Кілт сөздер: *оқытудың интерактивті әдістері, оқыту технологиялары, оқытудың белсенді әдістері, педагогикалық технология, интерактивті тақта.*

Повышение эффективности образовательного процесса с использованием интерактивных методов

БАЙМАХАНОВА Г.М. *- Южно-Казахстанский государственный педагогический университет, Шымкент, Казахстан, ORCID - https://orcid.org/0000-0002-8480-8562 e-mail:baimahan-gukanai@mail.ru*
КАЛИ М.М*. – магистрант, Южно-Казахстанский государственный педагогический университет, Шымкент, Казахстан, ORCID- https://orcid.org/0000-0001-9666-4597 e-mail: kalievas.s@mail.ru*
ОРЫНБАСАР И.К. *- магистрант, Южно-Казахстанский государственный педагогический университет, Шымкент, Казахстан, ORCID- https://orcid.org/0009-0004-2397-1691 e-mail: indira.orynbasar.2000@mail.ru*

Аннотация. *В данной статье рассмотрена актуальная проблема повышения познавательной активности студентов с использованием интерактивных методов обучения. Чтобы лучше понять тему, в статье представлен краткий обзор теоретических основ, а также результаты ограниченного исследовательского исследования. В нем дается общая концепция интерактивных методов обучения, целей, на достижение которых они направлены, и принципов, на которых они основаны. Точный процесс проведения интерактивного урока тщательно спланирован. Указывается характер материала, который рассматривается на каждом этапе. Для каждой обсуждаемой темы разработан набор интеллектуальных задач, способствующих развитию критического и образного мышления, а также построению мыслительных операций, визуализации и связыванию идей. Чтобы улучшить усвоение знаний студентами, был проведен тщательный анализ эффективности интерактивных методов обучения. Этот анализ включал исследование влияния этих методов на критическую обработку нового учебного материала, представленного в лекции. Результаты показали, что включение интерактивных методов обучения в педагогические образовательные программы университетов может значительно повысить способности студентов критически обрабатывать новую информацию. Для целей эксперимента были использованы стратегии наблюдения, диалога и опроса. На основе результатов исследования была предложена модель для повышения интеллектуальных способностей учащихся с помощью интерактивных подходов к обучению и даны соответствующие рекомендации.*

Ключевые слова: *Интерактивные методы обучения, технологии обучения, методы активного обучения, педагогическая технология, интерактивная доска.*

ӘОЖ: 54(075.8) https://vestnik.oqmpu.kz/kk
МҒТАР 14.25.09

ОРГАНИКАЛЫҚ ХИМИЯДАН БІЛІМ АЛУШЫЛАРДЫҢ ПӘНДІК ҚҰЗІРЕТТІЛІКТЕРІН ЖАТТЫҒУЛАР АРҚЫЛЫ АРТТЫРУ

БИТЕМИРОВА А.Е.*- х.ғ.к., доцент, Оңтүстік Қазақстан мемлекеттік педагогикалық университеті, Шымкент/Қазақстан, ORCID:https://orcid.org/0000-0002-7124-0277 e-mail: bitemirova1960@mail.ru*
БЕКЕЕВА Н.Н.*- магистрант, Оңтүстік Қазақстан мемлекеттік педагогикалық университеті, Шымкент/Қазақстан.ORCID:https://orcid.org/0009-0009-3523-5815 e-mail: nurila_bekeeva@mail.ru,*