

INTEGRATIVE CHEMISTRY TEACHINGDOI: [10.31618/nas.2413-5291.2021.4.73.505](https://doi.org/10.31618/nas.2413-5291.2021.4.73.505)***Hagverdiyev Kamil Nasir****Doctor of Philosophy in Chemistry, Associate Professor
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The modern education system is aimed at the formation of a highly educated, intellectually developed personality with a holistic view of the picture of the world, with an understanding of the depth of connections between phenomena and processes. Integration in modern society explains the need for integration in education. Integration provides an opportunity for self-realization, self-expression, creativity of the teacher, promotes the disclosure of abilities.

The use of an integrative approach in teaching is determined by the complex of needs of modern education.

Integration is a multivalued concept, and a leading trend in modern education, and a real need of the time. Integration is central to the integrative approach. The purpose of this article is to reveal the essence and possibilities of using an integrative approach in creating courses in chemistry.

Today, the use of computer technologies in education seems to be necessary, therefore, an important task of a modern teacher is to show students the capabilities of ICT. The availability of such courses will increase the productivity of the learning process. And so, integration is a prerequisite for the modern educational process.

It is necessary to highlight the functional components that characterize the dynamics of educational technology, integrated into the structural components. The main functional components that correspond to the structural components: goals, tools, effective products - as goals, organizational, managerial and performance evaluation capabilities. The teacher should be aware of the patterns of integration processes used in chemical and educational educational technologies.

АННОТАЦИЯ

Современная система образования направлена на формирование высокообразованной, интеллектуально развитой личности с целостным представлением картины мира, с пониманием глубины связей явлений и процессов. Интеграция в современном обществе объясняет необходимость интеграции в образовании. Интеграция дает возможность для самореализации, самовыражения, творчества учителя, способствует раскрытию способностей.

Использование интегративного подхода в обучении определяется комплексом потребностей современного образования.

Интеграция — это многозначное понятие, и ведущая тенденция современного образования, и реальная потребность времени. Интеграция является центральным понятием интегративного подхода. Целью данной статьи является раскрытие сущности и возможностей использования интегративного подхода в создании курсов по химии.

Сегодня применение компьютерных технологий в образовании представляется необходимым, поэтому важной задачей современного учителя является показать обучающимся возможности ИКТ. Наличие таковых курсов повысят продуктивность процесса обучения. И так, интеграция – необходимое условие современного учебного процесса.

Необходимо выделить функциональные компоненты, характеризующие динамику образовательной технологии, интегрированные в структурные компоненты. Основные функциональные компоненты, которые соответствуют структурным компонентам: цели, инструменты, эффективные продукты - как цели, организационные, управленческие и служебные возможности оценки. Учитель должен знать о закономерности интеграционных процессов, применяемых в химико-педагогических образовательных технологиях.

Key words: pedagogical technologies, integrative pedagogical technology, integrative technology, the use of integrative technologies, components of integrative technology, features of integrative technologies, integration of education, integrative processes, education, training, development

Ключевые слова: педагогические технологии, интегративная педагогическая технология, интегративная технология, использование интегративных технологий, компоненты интегративной

технологии, особенности интегративных технологий, интеграция образования, интегративные процессы, образование, обучение, развитие

Education practice shows that to create links of integration between different subjects is the most important factor in the lesson which develops the quality of teaching. Integrative teaching of chemistry is understood as a learning process based on the combination of different components: goals, content, methods, forms, tools, technologies, education.

Chemistry is an important and everyday science that requires varieties of teaching strategies that can enhance understanding and application for sustainable living. Teacher must pay attention the students' skills at the beginning of the lesson in order to stimulate the interest of the students. Identifying effective methods of teaching the subject at secondary school level that can change students' attitude towards the subject in order to enhance understanding and achievement.

It is practical oriented and, integrative learning technology is very important method in these proses. Integrative approach, integration processes and their examples, interdisciplinary and interdisciplinary integration, levels and forms of integration, integration methods and mechanisms, integrity are key concepts of integrative learning technology combines.

In science and education, the words "integrated", "integrative", "integrated", "integrated" are not synonyms, respectively, are used in the teaching of chemistry as a process, situation, property and result, which characterizes them. Therefore, the use of integrative teaching methods requires extreme accuracy and care. Integration processes are the processes of continuous change of key points formed from different components.

What are the key points in the integration process? The main points of the formation of correctness are as follows:

- 1) objective conditions ontological, epistemological, social-practical;
- 2) previously assigned components;
- 3) integration of components through certain integration mechanisms;
- 4) effective education as a result of integration. [1]

The structure of integration processes can be shown as follows. Interdisciplinary relations, conglomeration; (collection of knowledge about integration), synthesis of knowledge and methods of action within a certain topic are the forms of integrated education .

Ontological (unity of whole and part, general and separate), epistemology (synthesis in cognition), social and practical are the basis for integration.

Integration processes regardless of the level of performance:

- 1) the role of chemistry in solving modern global scientific and cognitive problems;
- 2) practical topics: effective application of chemistry in solving applied problems;
- 3) the importance of chemistry in the production and production of materials in practice;
- 4) taking into account social features.

It is necessary to distinguish between the concepts of "integrative teaching technology" and "integrative educational technology" in the teaching of chemistry. Thus, these concepts have many similarities, but also significant differences. Integrative technology is associated with a combination of different components of training and integrative technology - different components. [2]

Integrative educational technology is the process of systematic implementation of modern (traditional and non-traditional) educational technologies, content, methods, forms, tools, processes, mechanisms, components of pedagogical innovations based on the laws of integration processes.

Integrative educational technology is characterized by the following main features.

- Comprehensive explanation of goals and objectives and their joint solution. The main goal of integrative technology is to form a well-educated, professionally competent, competitively spiritually developed person who is ready for chemical education and self-education.

- Integration and differentiation, subsequent application of various means of educational technologies. These are integrative content, different methods, processes, mechanisms, pedagogical innovations, different forms and conditions for the implementation of chemical education.

- Multilevel and comprehensive assessment of the quality of effective products - new systematic knowledge of personality traits, universal skills and positive value relationships.

The features we distinguish are the main structural components that characterize the relative statics and existence of integrative education technology.

It is necessary to separate the functional components that characterize the dynamics of educational technology integrated into the structural components. We divide into structural components: targets, tools, key functional components that correspond to effective products - as a target, organizational, managerial and performance appraisal capabilities.

Our many years of experience in the professional and methodological training of chemistry teachers show that the successful mastery of integrative technology by both students and teachers is primarily related to the quality of mastery and application of certain special educational technologies. The chemist-teacher must know the laws of integration processes applied in chemical-pedagogical educational technologies. Unfortunately, examples of integration processes that need to be taken into account in educational technologies have not been formed.

We recommend using the following general rules for the effective operation of integrated educational technology:

- complexity of implementation of socio-economic, psychological-pedagogical, didactic-methodological and other factors of education;

- unity and diversity of relations between chemical and pedagogical education, stage, multi-stage vocational education;

- conditional educational processes of integration and innovation processes are conditioned by the main types of activities that are the system of activities of subjects - cognitive, communication, labor activity;

- integrity of the study of chemical and other objects of knowledge; in educational technology, it is divided into goals, content, value-oriented, procedural-action, motivation-stimulation, organizational-management and effective-evaluation aspects;

- they call the chemistry of education technology adapted to logic and personality a priority. [3]

It is necessary to know the didactic regularities of the integration processes used in the chemical pedagogical educational technologies inherent in the process of teaching chemistry. The effectiveness of integrative education technology is achieved taking into account the following didactic laws:

- basic logic of integrative chemistry;

- joint use of man-made substances and materials used in engineering and technology;

- the relationship and dependence between the composition, structure, properties of substances and materials and their application in engineering and material production technology;

- chemical, physical, environmental, etc. The effectiveness of the study of knowledge objects;

- the leading role of theoretical, chemical, physical and other knowledge.

It is impossible to achieve success without taking into account new practical knowledge in the effective use of the opportunities of integrated educational technology. In our opinion, special attention should be paid to the experience of complex use of educational technologies, combining various didactic games, trainings, listening, dialogues, video materials, tests, questionnaires, compulsory writing. Integrative educational technology helps to clarify the quality of subject content in vocational and methodological training of students in universities.

Only integrative education technology can provide highly qualified training of bachelors and masters of chemistry education in addition to chemistry teachers of specialists who can work creatively in the new socio-economic competition.

A promising direction in the system of educational technologies is integrative-modular training (IMT). IMT chemistry method and technology have been developed and tested by teachers associated with the university's prep department. The developed material can be used by all educational institutions as a theoretical basis.

The module is widely understood in various semantic meanings:

- a content block that can be easily changed to another equivalent block;

- a relatively independent part of the topic;

- the structural or functional component of any of them as a pedagogical-didactic, methodical system;

- related subjects;

- didactic information, functional and others.

As a didactically completed information-functional unit, the module can operate at different stages, including the level of knowledge that a student must acquire in a particular learning process.

Each block consists of a certain number of modules in accordance with the educational standard.

The block that forms the system in the immutable part of the content is the "Problem Solving" block.

The success of integrative-modular teaching of chemistry (ITC) is ensured by the implementation of methodological conditions covering the following:

- use of didactic complete information and functional units;

- didactic and professional significance of the content of the modules;

- complex formation and application of education are special goals;

- the process of professional analysis of knowledge about chemistry;

- content of integrative chemistry education;

- traditional and innovative teaching aids that ensure the implementation of integrative-modular technology;

- features of multi-level assessment of learning outcomes: skills, systematic knowledge, positive motives, value relationships, necessary components of pre-professional knowledge, preparation for chemistry education and self-education. [4]

Innovative teaching of chemistry. Innovation as a pedagogical and educational category the term renewal, change, renewal from Latin is widely used in the theory and practice of chemical education.

A chemistry teacher should be aware of pedagogical and educational innovations. The most important features that characterize educational innovation are:

- educational activity is associated differently with a different approach to the educational process, in mass practice and cultural traditions, with the process of formation of students' personalities;

- focus on new solutions to school education problems;

- innovation of ways to solve educational problems and tasks;

- acquisition of effective achievements in qualitatively new education;

- new innovative technology with different educational model;

- the content of fundamentally different innovative education;

- look for new tools, forms, teaching and learning methods, directions

aimed at the optimal development of educational subjects.

The theory and methodology of innovative teaching of chemistry in new types of schools have been studied and successfully tested.

The innovative component is implemented through innovative activities (creative activities of teachers and students), learning all components of teaching, learning and cognitive activities.

The innovative activity of the teacher consists of the teacher's application of new ideas, new means,

methods, forms, processes, methods, as well as the application of innovative technologies in the educational process.

Students in innovative chemistry teaching technology are involved in creative activities in the process of organizing and implementing its interrelated forms. The results of students' creative activity are as follows:

- development of skills required for universal education, cognitive and educational activities used in solving vital tasks;
- further development of creative abilities;
- have a rich creative experience.

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АНГЛИЙСКИЙ ЯЗЫК ДЛЯ СПЕЦИАЛЬНЫХ ЦЕЛЕЙ В НЕЯЗЫКОВОМ ВУЗЕ: ПРОЕКТИРОВАНИЕ КУРСА

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ENGLISH FOR SPECIFIC PURPOSES IN TECHNICAL UNIVERSITY: COURSE DESIGNING

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АННОТАЦИЯ

Рассматриваются некоторые особенности проектирования курса английского языка для специальных целей с учетом потребностей общества в высоко-квалифицированных специалистах соответствующего профиля.

ABSTRACT

Some peculiarities of the English for specific purposes course designing with the account of the social needs in highly qualified professionals of the appropriate specialty.

Ключевые слова: английский язык для специальных целей; неязыковой вуз; профессионально важное качество; профессиональное общение

Keywords: English for specific purposes; technical university; professionally important feature; professional communication

Учебные планы подготовки специалистов и бакалавров в обязательном порядке включают и подготовку по иностранному языку. В зависимости от требований, предъявляемых к выпускникам вузов, исходя из существующих наборов профессионально важных качеств специалистов, учебные планы могут включать несколько дисциплин, предполагающих изучение иностранного языка помимо собственно дисциплины «иностранный язык». Например, иностранный язык делового общения, профессиональный иностранный язык или профессиональный английский язык, английский язык для специальных целей и т.д. При этом подразумевается изучение одного иностранного

языка, чаще всего английского. Включение дополнительных дисциплин, предполагающих изучение иностранного языка, связано с социальным заказом на профессионалов определенного уровня подготовки, владеющих всеми необходимыми в их будущей профессиональной деятельности знаниями, умениями и навыками. От того насколько хорошо выпускник владеет иностранным языком, точнее английским языком для специальных целей (который необходимо специалистам, чьи профессиональные обязанности связаны с обеспечением функционирования портов и судов, т.е. с морским английским языком) зависит его успешность как в поиске работы, так и в