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**INTEGRATION OF ACADEMIC DISCIPLINES IN ENGINEERING EDUCATION
AS A PEDAGOGICAL PROBLEM**

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Abstract

This article covers the issues of full informatization of the educational system of reforms in our society in the field of Education, deep knowledge of each future specialist of the basics of Engineering Science in the field of Chemical Technology, in this sense, the effective use of new pedagogical technologies in continuity with the production of rethinking the content of traditional teaching, integration

Keywords: Higher engineering education, interdisciplinary teaching, computer, general and general education, building materials.

Introduction

Today, the reforms in our society in the field of higher education necessitate the full informatization of the education system, the deep knowledge of each future specialist of the basics of Engineering Science in the field of Chemical Technology, the revision of the content of traditional teaching in this sense, the organization of Engineering Science on the basis of the effective use To do this, first of all, it will be necessary to fully computerize the educational processes of higher educational institutions, to integrate the educational disciplines on the basis of Information Technology. Alternatively, the development of the information educational environment in a higher educational institution, the creation and use of the information base of future engineers will increase the possibility of ensuring the integration of Sciences, the development of interdisciplinary integrative regulatory documents on entrepreneurship. From the results of scientific research carried out in the process of using information technology in engineering education, it became known that while it is important to study its theoretical, practical, scientific and methodological aspects, certain results have been achieved in the field of multimedia electronic methodological complex (textbook, educational manual and methodological recommendation) in some engineering areas, the introduction of distance education and, much attention was paid to the theoretical and practical aspects of the process of improving general education and specialist science on the basis of the integration of Information Technology. One of the most important problems in the system of continuing education is the integration and differentiation of academic disciplines.

While integralization serves to strengthen the content link between subjects of various fields, to concentrate them, to form a holistic vision of future engineers about nature and society, differentiated education provides students with a high level of knowledge in their specialty. The solution of the problem of using an integrative approach to improving the preparation of



future engineers for professional activities educational institutions is directly related to the effective use of modern information and new pedagogical technologies in the educational process, the correct Organization of this process provides the basis of the project creativity model of teaching, while not only improving the effectiveness of training.

The increase in the scale of information every day causes an increase in the volume of knowledge provided to future engineers, an increase in the amount of disciplines taught in the specialty. This, in turn, weighs on students psychologically, weakening their interest in these subjects, and there is a decrease in the level of knowledge acquisition. To eliminate such negative situations, the need arose for a successful solution to the problem of integrating educational disciplines in improving personnel training in engineering. Thanks to integration in improving the training of future engineer personnel, the volume of information that students need to know is reduced to a certain extent, student tension is prevented and time is saved.

Based on the goals and objectives of the higher educational institution, studying the external and internal continuity of a particular science, ensuring its interdisciplinary integration will not only increase the range of knowledge of future engineers, provide an opportunity for him to learn more about the environment, form a worldview, and also be able to apply his existing knowledge to practice. In pedagogical dictionaries, the concept of "inter-subject relations" is defined as the mutual adaptation of educational programs. Inter-subject relations in the process of training engineer personnel activate the educational and cognitive activities of students.

In the process of solving issues of inter-subject cognition, the student mobilizes his activity to search for familiar subject knowledge in the search for existing unknown relationships or to form new concepts based on clearly established subject relations. The knowledge gained as a result of experience in mastering inter-subject relations plans cognitive activity. Saburova D. A. for the first time in their research, a complex of principles of unity of education and training, motivations, problematicity, orientation in the profession, Polytechnic, knowledge continuity, inter-subject relationship, which carries out the connection of general and professional education is given [1]. In improving the training of future engineers, it is necessary to study and analyze the Social, Psychological, pedagogical, methodological literature on the integration of educational disciplines in scientific theoretical terms and to study the pedagogical requirements, criteria for the integration of educational disciplines with other educational disciplines as a whole holistic system. As a result, the attitude of students towards science changes (increases interest in the subject); knowledge not mastered by students in general high school is replenished at the expense of mastered knowledge; due to the increase in polytechnic literacy, the professional skills of students are formed; affects the effective upbringing of the scientific worldview; it becomes possible to develop the techniques necessary When studying the knowledge that constitutes the foundations of Science in the training of engineering personnel, one should not forget to integrate the connections between them. B.S.Abdullaeva noted that interdisciplinary communication is not only a means of achieving the comprehensive development of the student's personality on the basis of general social goals in the study of Sciences, but also one of the important factors in the formation of specific pedagogical tasks, the definition of Science Systems based on knowledge, skills, relationships [2].

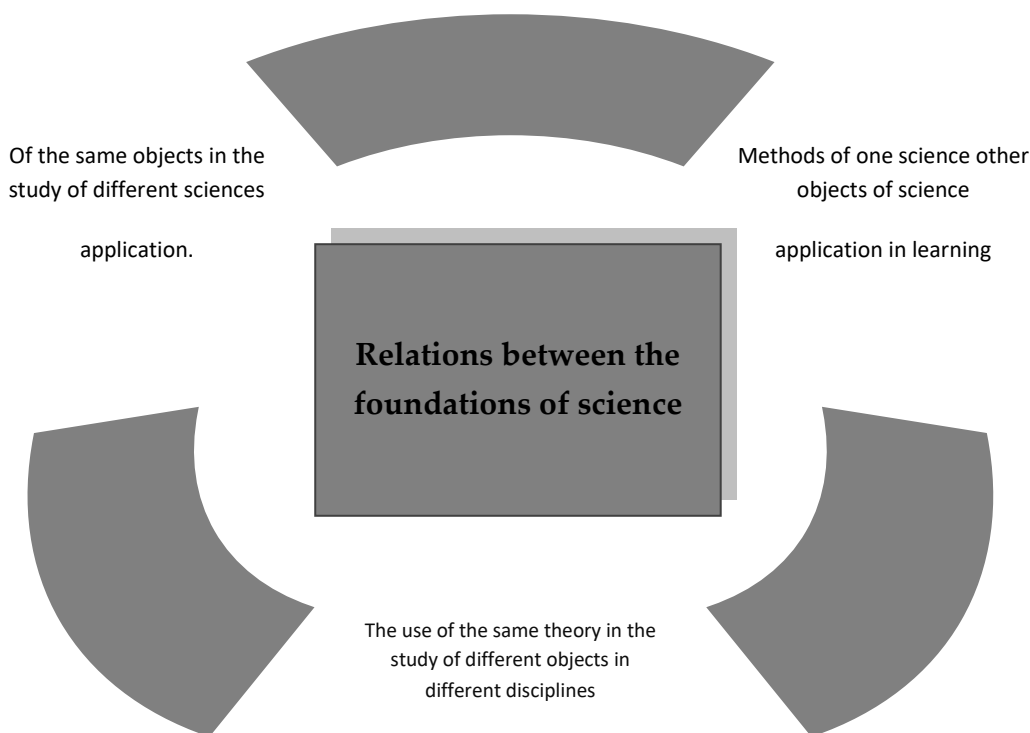


Figure 1. Relations between the foundations of science

Inter-subject communication should be established both in the field of mastering knowledge and skills, and in the formation of an emotional-value attitude to objects that are assimilated in creative activity and being.

Yu.V. Sidorova believes that interdisciplinary communication is necessary not only to ensure the accumulation of information knowledge in the minds of students, but also to show its practical significance, from this point of view, to help students in vocational education solve practical issues of a polytechnic nature and form the skills to apply them in Practice [3]. The types of integration and the requirements for it are presented in the table below.

Table 1. Types of integration and requirements for it.

Nº	Types of integration	Demand content
1.	<i>Object integration</i>	Symbols of each specialty in different disciplines are included in one topic, section or course (land, water, air, food and other).
2.	<i>integration into the concept.</i>	According to the specialties, topics or courses are covered that reveal the content of the general concept (Energy, Action, substance, information, among others).
3.	<i>Integration into theory.</i>	Quantum theory in some natural sciences; evolution in sociology is based on theory.



4.	<i>Methodological integration</i>	As with the methodology of philosophy, the integration of individual methods of scientific knowledge is considered, which includes the implementation of a systematic approach and its essence, the establishment of problems related to the specialty and their solution; clarification and forecasting in science; observation, experience, modeling as well as the essence and application of the structure.
5.	<i>Problematic integration</i>	It covers interdisciplinary problems of various degrees of latitude (Environmental Protection, karshi fight against drug addiction, etc.).
6.	<i>Activity integration</i>	Discussion on professions and specialties, work in groups, drawing up interdisciplinary plans and projects, etc.
7.	<i>Practical integration</i>	Comprehensive review of various process or technical products: antibiotics, synthetic substances, biotechnology, computers, etc.).

Integration is a Latin word that means restoration, filling, combining parts as a whole. In education, knowledge integration or interdisciplinary linking is used a lot. Integration is a whole complex of knowledge about nature, the orientation of knowledge on various sciences to the solution of a single goal.

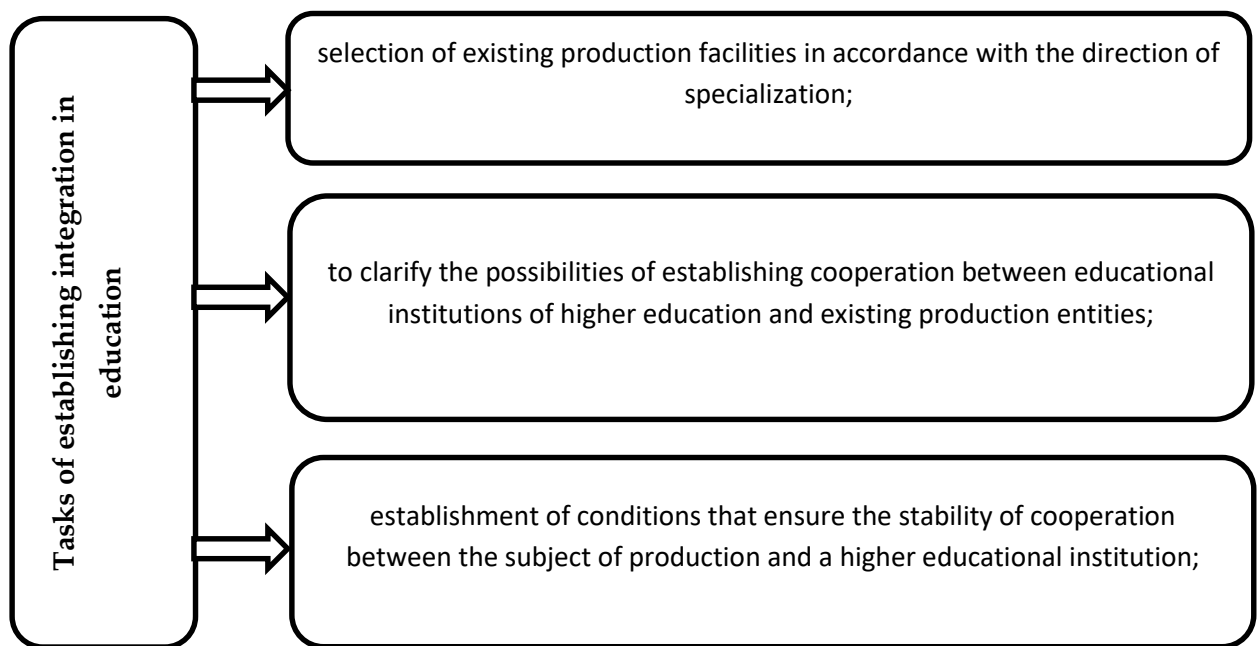


Figure 2. Tasks of establishing integration in education

Integrated training courses should help students to form a whole picture of the integrity of the world, and the content of each subject of study should be expressed not only in combining the topics envisaged in the muayin curriculum, but also in the phenomena of material existence. After that, taking into account the wide application of traditional, systematic, research, technological, complex, functional, integrative and such approaches in the process of



educational practice, the approaches in the educational system will include the descriptions given below.

Technological approach. The technological approach is the separation of the educational process into interconnected stages; coordination of the actions performed to achieve the set goal and their implementation in a certain sequence; presupposes the execution of the designed work and actions on the same demand. The training material is drawn up in accordance with the purpose of the training, is drawn up into certain parts or modules. The technological approach guarantees the achievement of educational goals.

A research approach. In this, more attention is paid to the development of the student's ability to solve problems, their independent assimilation of new knowledge, taking the initiative. In the research approach, the student's educational and cognitive activity, personal initiative are supported, opinion and interest are put in the foreground, education is based on cooperation.

Integrative approach. Integrated education teaches students to think creatively. It serves not only to accelerate, systematize, optimize educational and cognitive activities, but also to raise the general culture of the educational community.

An integrative approach or intersubjective linkage is a means of strengthening educational and educational work. On the basis of the inter-subject link, learners are given knowledge of values, skills and abilities necessary in practical educational activities, dialectical views are formed. The introduction of interdisciplinary connections serves to systematize, deepen and strengthen the knowledge of future engineers; expands the scientific worldview, arming the material world, a whole picture of its development with scientific presentation; provides an opportunity to apply and consolidate the knowledge, skills and skills acquired in classes in various disciplines in a complex way.

REFERENCES

1. Сабурова Д. А. Интеграция информатики с другими предметами школьного курса // Информационно-коммуникационные технологии в образовании .материалы Всероссийской научно-практической конференции. – <http://ito.edu.ru/Arkhangelsk/II/II-0-48.html> №29
2. Абдуллаева Б.С. Фанлараро алоқадорликнинг методологик дидактик асослари. Монография. – Т.: Фан-2005. -25б.
3. Сидорова Ю.В. Формирование общих и профессиональных компетенций студентов среднего профессионального образования / Ю.В. Сидорова. // Педагогическое образование в России. - №6. - 2012. – 131-135 с.
4. Бозоров А. Н., Ваккасов С. С., Михридинов Р. М. Влияние структурных изменений при высокотемпературном отжиге на механические свойства молибденовых проволок // Молодой ученый. – 2016. – №. 7-2. – С. 12-15.
5. Ваккасов С. С. и др. Composition of liquid paraffins for flotation enrichment of potassium chloride // Химия и химическая технология. – 2020. – №. 1. – С. 20-22.
6. Ваккасов С. С., Кадиров Х. Э. Флотационное обогащения хлорида калия из природного сильвинита в присутствии жидких парафинов, полученных из местного сырья. – 2020.



7. Равшанов, З. А., Ваккосов, С. С., & Галипов, Н. Х. (2016). Физико-химические основы формирования структуры гипсовых вяжущих материалов. *Молодой ученый*, (7-2), 15-19.
8. Shukhrat B. et al. Study Of Surfactant Properties And Flotation Activity Of Aliphatic Amine Synthesized From Industrial Waste //Solid State Technology. – 2020. – Т. 63. – №. 6. – С. 12170-12179.
9. Shukrillaevna, X. X. (2020, December). HEALTHY LIFESTYLE FOR WOMEN IN THE FAMILY FORMATION. In *Конференции*.
10. VAKKOSOV S., ORZIKULOVA S., KADIROV X. Obtaining Flotation Reagents Based on Local Raw Materials for Flotation of Silvinitite //Eurasian Journal of Research, Development and Innovation. – 2021. – Т. 9. – С. 1-9.
11. Исакулова, М. Ш., Каримова, Ф. С., Ваккасов, С. С., & Мардонов, З. А. (2015). Компьютерное моделирование пассивации частных дефектов нанокластера кремния. *Молодой ученый*, (13), 119-121.
12. Kiryigitovich M. A., Axmatqulovna X. D. ENVIRONMENTAL PROBLEMS AND METHODS OF MANAGEMENT OF MANUFACTURING ENTERPRISES //Web of Scientist: International Scientific Research Journal. – 2022. – Т. 3. – №. 6. – С. 729-734.
13. Kiryigitovich, Mamatkulov Asilbek, et al. "INVESTIGATION OF THE PROCESS OF SELF-DISCHARGE ACID BATTERIES." (2020).
14. Xamdamova X. TRAINING-AS A POPULAR FORM OF ACTIVE LEARNING ADULTS //Конференции. – 2021.
15. Xamdamova, H. (2021). THE METAPHORICAL NATURE OF WORDS SPECIFIC TO THE NOUN PHRASE. In *СОВРЕМЕННЫЕ ПРОБЛЕМЫ НАУКИ, ОБЩЕСТВА И ОБРАЗОВАНИЯ* (pp. 152-154).
16. Xamdamova X. SPEAKING A FOREIGN LANGUAGE-AS A KEY TO FURTHER SELFIMPROVEMENT //Конференции. – 2021.
17. Jumanazarova G., Hamdamova K. Metaforalization of Lexemas Specifically in the Doston" Rustamkhon" //International Journal of Social Science Research and Review. – 2022. – Т. 5. – №. 5. – С. 136-140.
18. Erkinovna A. D. et al. Educate convinced-The purpose of family and society //European Journal of Molecular and Clinical Medicine. – 2020. – Т. 7. – №. 6. – С. 2345-2352.
19. Rashidova, N. T., Shonakhunov, T. E., Akhmedova, Z. R., Sadikov, I. S., & Aripov, B. F. (2021). Basidial Mushrooms and Prospects for their use in the Biotechnology. *CENTRAL ASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES*, 2(5), 183-188.
20. Rashidova N. T. et al. Basidial Mushrooms and Prospects for their use in the Biotechnology //CENTRAL ASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES. – 2021. – Т. 2. – №. 5. – С. 183-188.
21. Shonakhunov T. E. et al. MICROBIAL TECHNOLOGY OF OBTAINING ANIMAL PRODUCTS //XIII International Symposium on the Chemistry of Natural Compounds (ISCNC 2019). – С. 206.