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ISSUES OF INTERDISCIPLINARY INTEGRATION IN THE TEACHING OF SPECIALIZED ACADEMIC SUBJECTS

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Abstract
The reforms being implemented in the field of education in our republic necessitate the full informatization of the education system, the revision of traditional teaching content, the integration of academic disciplines, and the organization of instruction based on the effective use of modern pedagogical technologies. In turn, this creates the need to establish a unified information and educational environment within educational institutions, to develop and effectively utilize information databases, and to improve educational and regulatory documents on the basis of interdisciplinary integration.

Keywords: Integration, In pedagogical dictionaries, Inter-subject relationships, Continuity, schematic table of interrelationships.

Introduction

The reforms being implemented in the field of education in our republic necessitate the comprehensive informatization of the education system, the revision of traditional teaching content, the integration of academic disciplines, and the organization of the educational process based on the effective use of modern pedagogical technologies. In turn, this requires the establishment of a unified information and educational environment within educational institutions, the creation and efficient utilization of information databases, and the improvement of educational and regulatory documents on the basis of interdisciplinary integration.

Integration is a term derived from the Latin language and denotes restoration, supplementation, and the unification of separate parts into a coherent whole.

Knowledge integration, or interdisciplinary linkage, is widely utilized in education. One of the major global challenges within the education system is the integration and differentiation of academic disciplines.

While integration serves to strengthen the structural relationships among academic disciplines, promote their generalization, and further enrich students' holistic understanding of nature and society, differentiated education aims to provide learners with in-depth knowledge in their chosen field of specialization.

modern information technologies and innovative pedagogical technologies in the educational process of educational institutions. The proper organization of this process not only enhances the effectiveness of teaching and learning but also provides the foundation for a project-based creative model of education.

The continuous growth in the volume of information has led to an increase in the amount of knowledge that must be delivered to students, as well as a rise in the number of subjects taught within various specializations. Consequently, this places a significant psychological burden on students, reducing their interest in these subjects and contributing to a decline in the level of knowledge acquisition. To overcome such negative consequences, it is essential to successfully address the problem of integrating academic disciplines.

The integration of academic disciplines contributes to a reduction in the volume of information that students are required to master, thereby alleviating academic overload and promoting more effective time management.

Based on the goals and objectives of an educational institution, studying the internal and external relationships of a particular discipline and ensuring its application to other fields of study not only broadens students' cognitive horizons but also enables them to acquire a more comprehensive understanding of the surrounding environment, develop their worldview, and apply their existing knowledge in practice.

In pedagogical dictionaries, the concept of "interdisciplinary relations" is defined as the coordination and alignment of educational curricula. Interdisciplinary relations within the educational process enhance students' learning and cognitive activities. In this context, students direct their intellectual efforts toward identifying previously unknown relationships based on familiar subject knowledge or toward forming new concepts through established interdisciplinary connections. As a result of experience gained in mastering interdisciplinary relations, an increased motivation to acquire knowledge can be observed.

Interdisciplinary relationships can be categorized into connections between the knowledge and skills unique to individual academic disciplines and connections between the knowledge, skills, and competencies shared across different fields of study.

In the study of the knowledge forming the foundations of academic disciplines, it is essential to ensure that the interrelationships among these bodies of knowledge reflect the interrelationships that exist among the disciplines themselves.

1. The Concept of Interdisciplinary Connections.

Interdisciplinary connections should be fostered both in the acquisition of knowledge and skills and in the development of creative activity, as well as in shaping students' emotional and value-oriented attitudes toward the objects and phenomena of reality that are subject to learning.

✓ To ensure the effective implementation of integration in education, it is necessary to address the following tasks:

✓ Identifying and selecting production-related facilities and objects that correspond to the specific area of specialization;

✓ Determining the possibilities for establishing cooperation between educational institutions and production entities;

✓ Establishing the conditions that guarantee the sustainability of cooperation between production entities and educational institutions.

Interdisciplinary relationships contribute to the integration of all structural elements of the teaching and educational process—including content, forms, methods, techniques, and instructional means—into a coherent and unified system. Furthermore, they are regarded as a key factor in ensuring the quality and effectiveness of education.

The approaches to implementing interdisciplinary relationships are as follows:

➢ • The sequencing and continuity of studying various subjects should be arranged in time in such a way that the learning of one subject supports and facilitates the study of another.

➢ • Providing a consistent and unified approach to the development of general concepts, skills, and competencies.

➢ • Ensuring the consistency and uniformity of requirements for knowledge acquisition and the development of skills and competencies.

➢ • Ensuring the broad use of knowledge, skills, and competencies from other disciplines in the learning of a specific academic subject.

The implementation of interdisciplinary relationships in educational institutions necessitates the use of computer and information technologies, as instructional, modeling, demonstration, and assessment-based pedagogical software tools enable learners to generalize and synthesize knowledge, as well as to acquire generalized methods of cognition and problem-solving.

The conditions for the logical structuring of academic curricula in an interrelated and coherent manner are as follows:

- Establishing interrelationships among the objects studied across different academic disciplines.
- Organizing interrelationships among related laws and theories across disciplines.
- Creating interconnections between research methods and students' practical activities.
- Creating interconnections between physical laws and philosophical concepts.
- Establishing relationships of computational, measurement, and graphical nature.
- Organizing interrelationships among pedagogical, psychological, and philosophical knowledge, as well as the methodological approaches, techniques, and methods of teaching and upbringing.

Compliance with the principle of interdisciplinary relationships is regarded as one of the important factors in enhancing the quality of the educational process. It is well known that such relationships ensure a comprehensive and in-depth study of the object being examined. In pedagogical theory, this concept is interpreted at the levels of continuity, interdisciplinary connections, reciprocal relations, and integrative relationships.

Continuity implies the gradual progression in which acquired knowledge, skills, and competencies are expanded, deepened, and refined over time.

Interdisciplinary relationships, by their essence, constitute a broad concept that aims to comprehensively reveal the different aspects and characteristics of the object being studied.

Mutual relationships, by their essence, denote the interconnection between two academic disciplines, involving the application of knowledge and methods of action acquired in one subject to another, and vice versa.

Integrative relationships represent a relatively higher level of interconnection, distinguished by their purposeful inclusion in the curriculum and alignment with educational goals; accordingly, they require deliberate provision and support. As a result, they enable the formation of a systematic and comprehensive understanding of an object, as well as the development of methods of action.

In order to establish interdisciplinary relationships, the content of instructional material is analyzed from logical, psychological, didactic, methodological, and other perspectives. In pedagogical practice, topic-based and structural analysis methods of instructional content are widely used. Through topic-based analysis, only superficial connections between topics of different academic subjects are identified, whereas structural analysis enables the identification of relationships among the constituent concepts, facts, laws, judgments, conclusions, and representations of the learning material.

The identified interdisciplinary relationships are recorded in schematic tables or in verbal form. The form in which interdisciplinary relationships are documented depends on the capabilities of the user.

References

1.X.Abdurasulov,K.N.Xolov,B.B.Qarshiyev. “BIRINCHI TARTIBLI DIFFERENSIAL TENGLAMA YORDAMIDA ELEKTRO-TEXNIKAGA OID MASALALARNI YECHISH”. Oriental Renaissance: Innovative, educational, natural and social ciences. May 2022: 390-398.pdf

2. Farhod Halimjonovich Haydarov, Shamshod Akhtamaliyev, Madalixon Nazirov, Behzod Boyxonovich Qarshiyev, Uniqueness of Gibbs measures for an Ising model with continuous spin values on a Cayley tree. Reports on Mathematical Physics.Volume 86, Issue 3, December 2020, Pages 293-302

3. Х. Абдурасулов, И.А.Ачилов, Б.Б.Каршиев. “Применение Бета и Гамма функцией к вычислению некото-рых важных в прикладных задачах” CENTRAL ASIAN JOURNAL OF MATHEMATICAL THEORY AND CO MPUTER SCIENCES 49-56 bet.05 | May 2022.

4. B.B.Qarshiyev., Z.Absamatov, Формирование и совершенствование педагогических навыков в процессе обучения. Научно-методический журнал Вестник науки и образавания 2020. № 6. (84) Часть 1 С 79-84

5. BB Qarshiyev . APPLICATION OF STEAM IN INSTITUTIONS OF EDUCATION was published by in the International Journal of Education, Social Science & Humanities (Vol. 12, Issue 5, pp. 870-874) in 2024.

6. Karshiyev Begzod Boykhanovich. (2023). DYNAMIC SYSTEMS AND SOME OF THEIR APPLICATIONS. INTERNATIONAL BULLETIN OF APPLIED SCIENCE AND TECHNOLOGY, 3(5), 495–497. https://doi.org/10.5281/zenodo.7939563.

7. B.B. Qarshiyev. MAIN DIRECTIONS IN THE DEVELOPMENT OF STEAM EDUCATION ELEMENTS. INTERNATIONAL BULLETIN OF APPLIED SCIENCE AND TECHNOLOGY, 3(5), 603–609. https://doi. org/10.5281/zenodo. 7949798 (2023).
8. Б.Э .Эшматов, З.А. Абсаматов, Б.Б. Каршиев, О НЕКОТОРЫХ ЗАДАЧАХ ДЛЯ УРАВНЕНИЯ ЧЕТВЕРТОГО ПОРЯДКА - SCIENCE AND WORLD, 2013
9. B.B.Qarshiyev., Z.Absamatov, Педагогическая деятельность как явление социалъно – педагогической. Научно-методический журнал Проблемы педагогики № 2 (47),2020 С. 100-103. Mathematics and Physics
10. Bozarov Dilmurod Uralovich, G‘ulomova Muhabbat Mahmudovna. BOSHLANG‘ICH SINFLARDA DIDAKTIK O‘YINLAR ORQALI MATEMATIKA FANINI O‘QITISH Vol. 4, No. 02, 2025 ISSN: 2181-437612

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