

FORMATION OF THE PROFESSIONAL COMPETENCE OF STUDENTS THROUGH THE INTERDISCIPLINARY INTEGRATION OF PHYSICS INTO THE SCIENCES OF ARCHITECTURE AND CONSTRUCTION

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Abstract

The article presents the stages of formation of professional competence of students through interdisciplinary integration of architecture and construction sciences in the process of training future builder-engineers from physics in technical higher education institutions.

Keywords: physical science, physical training, professional competence, interdisciplinary integration, architecture and construction sciences.

The content of the development of the higher technical education system in our country and the large-scale reforms that are being carried out in terms of improving the quality and efficiency of the teaching technology increase the possibility of using pedagogical approaches aimed at the modernization of the educational content [8] and the development of professional competence of future builders-engineers. In technical higher education institutions, especially in the training of specialists in the fields of architecture and construction, the scientific and theoretical foundations of improving the content of physics, teaching physics based on the integration of architecture and construction sciences, studying the problems of improving their skills and qualifications, developing the methodological foundations of the proposed teaching concept becomes important [1].

In the 2021-2022 academic year, a total of 240 hours have been allocated for physics at the Tashkent Institute of Architecture and Construction, of which 60 hours of lecture classes, 30 hours of practical classes and 30 hours of laboratory classes have been allocated. 120 hours are allocated for independent education. Physics is taught in 5 sections, namely "Mechanics", "Molecular physics and thermodynamics", "Electromagnetism", "Optics", "Atomic and nuclear physics". The content of the lectures is sufficient at first glance, but the content of the theoretical information in the existing literature reflects the content of pure physics, and it can be seen that the application and integration of these physical laws in the construction industry is not ingrained [2]. For this reason, instilling the content of physical science directly into the construction industry and all the processes in this industry will undoubtedly serve to prepare

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students based on the requirements of the time, to ensure that they become fully mature specialists [6].

The integrity of the educational process for training specialists in the field of architecture and construction in technical higher education institutions is achieved through interdisciplinary integration relations. The interdisciplinary approach to education allows students to independently acquire knowledge in various fields of science and production, group them and direct them to solve a specific professional problem. In this case, the boundaries between courses and subjects are variable, which allows students to form an integral system of knowledge [7].

The fundamental nature of physical knowledge implies that the knowledge formed by students in physics classes in technical higher education institutions is the basis for learning general technical and special sciences, mastering new techniques and technologies [3]. The content of the physics course should contribute to the formation of students' ideas about the modern physical image of the world. In this case, physical knowledge is integrated and taught subjects are united by a general construction methodology focused on interdisciplinary relations [4]. The success of the implementation of the method of designing objects of professional activity in physics classes depends on the cooperation of professors and teachers of natural and professional sciences [5].

Figure 1 below shows the sequence of steps in the formation of students' professional competence through interdisciplinary integration of the physics course with architecture and construction sciences.

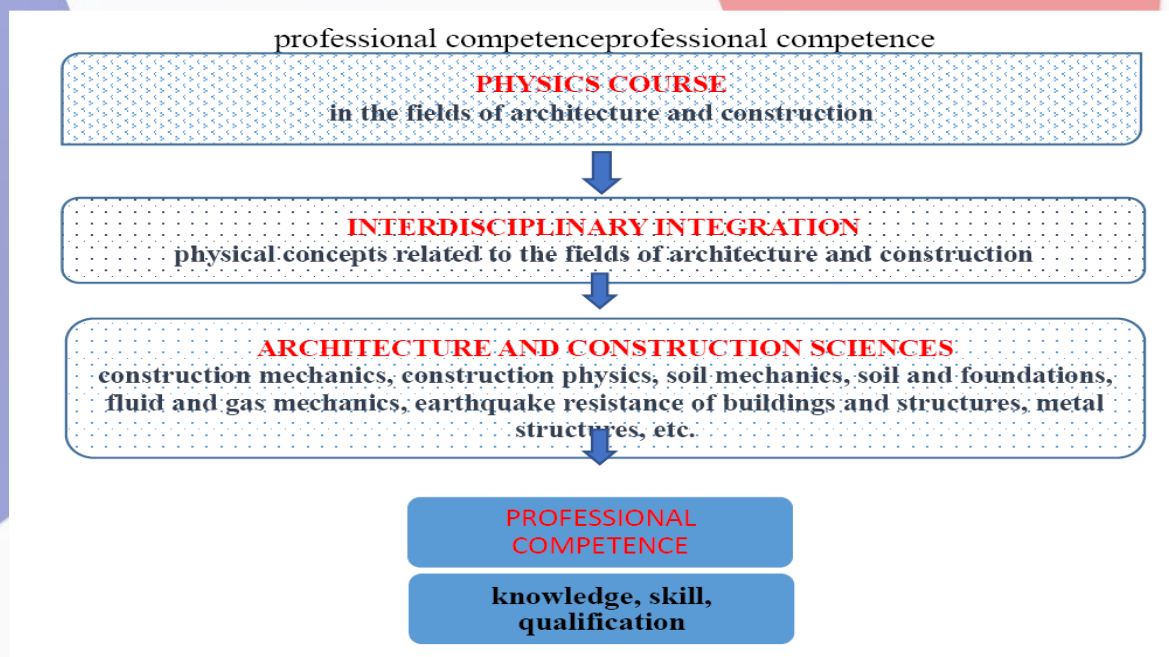


Figure 1. Stages of formation of professional competence of students through interdisciplinary integration of physics course with architecture and construction sciences.

The integration of physics into architecture and construction sciences is carried out through physical concepts. In this case, the adaptation of physical science to the fields of architecture and construction leads to the formation of professional competence of requirements.

Therefore, the adaptation of lecture, practical and laboratory training directly to the construction industry leads to the development of professional competence of future builders-engineers. Also, we believe that it is necessary to demonstrate the main directions of practical application of acquired physical knowledge and to be accompanied by a sufficient number of examples of their practical application.

References

1. Gareth Jones. "Competence and Understanding—A Personal Perspective" Selected Contributions from the International Conference GIREP EPEC 2015, Wroclaw Poland, 6–10 July 2015 y. P. 11-24.
2. Jeffrey E. Froyd, Matthew W. Ohland. "Integrated Engineering Curricula". Journal of Engineering Education. P. 147-164.
3. Begmatova D.A., Nortojiyev A. M. Qurilish sohasidagi oliy ta'lim muassasalarida fizika mashg'ulotlarini o'tkazishning integratsiyasi// Toshkent davlat pedagogika universiteti ilmiy axborotlari. – Toshkent, 2020. – №12. – B. 40–45.
4. Nortojiyev A. M. Methods of ensuring integrative approach to teaching physics // International Multidisciplinary Conference on Scientific Developments and Innovations in Education. –Greece, 2022. – P 19-21.
5. Nortojiyev A. M. Teaching physics on the basis of integration of architecture and building sciences // International Conference on Developments in Education, Sciences and Humanities. – Hosted from Washington, DC USA, 2022. – P. 116-117
6. Begmatova D.A., Nortojiyev A.M., Khudayberdiyev S.S., Mahmadiyrov A.Z., Nosirov N.B. The importance of physical exercises in the training of specialists in the field of architecture and construction // International Conference on Problems and Perspectives of Modern Science. AIP Conference Proceedings 2432, 030056 (2022); <https://doi.org/10.1063/5.0089959> Published Online: 16 June 2022.
7. Nortojiyev A.M. Method of conducting practical training in physics in technical higher education institutions by the method of designing professional activities // Asian Journal of Research in Social Sciences and Humanities. – Scientific journal impact factor: 8.061(2022). P.350-354.
8. E.B.Saitov., Sh.Kodirov., Z.F.Beknazarova., B.M.Kamanov., A.Nortojiyev., N.Siddikov. Developing Renewable Sources of Energy in Uzbekistan Renewable Energy Short Overview: Programs and Prospects. // International Conference on Problems and Perspectives of Modern Science. AIP Conference Proceedings 2432, 020015 (2022); <https://doi.org/10.1063/5.0090438> Published Online: 16 June 2022.