FORMATION OF MAIN GENERAL COMPETENCES OF FUTURE ENGINEERS AND ITS STAGES.

Tajibaev Ikram Uralbaevich,
Chirchik State Pedagogical University.

Nosirov Nizomiddin Baratovich,
Tashkent University of Architecture and Construction,
Chirchik State Pedagogical University
E-mail: nizom1990nizom@gmail.com.

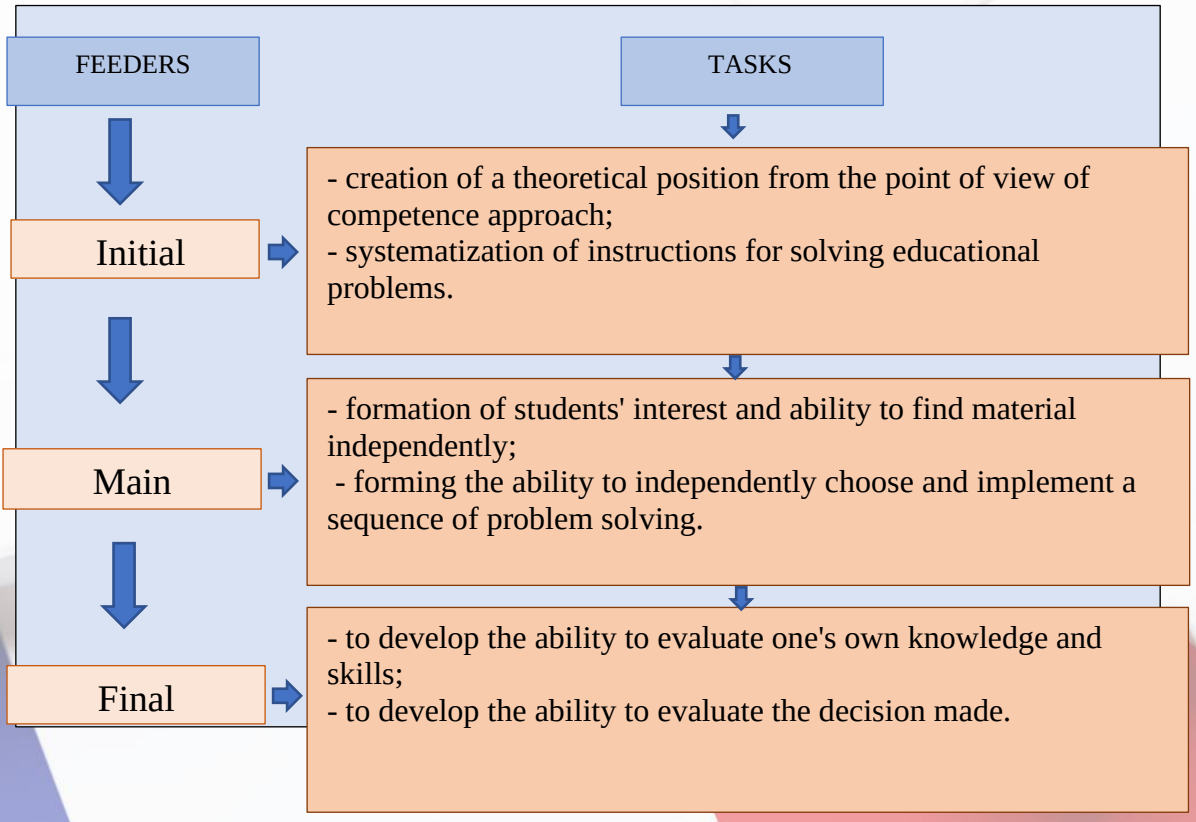
Abstract
This article presents tasks in the educational process based on a comparison of the stages of solving physical and engineering problems in preparing engineers for professional activities.

Key words: physics course, competence, educational and methodological support, educational process, model, analysis, theoretical knowledge, independent work, individual, invariant.

It is very important to develop a methodology for the theoretical and practical training of the general physics course in the formation of the basic general professional competences of future engineers.

Due to the increase in the scope of tasks solved by engineers, the content, goals and tasks of engineering work are changing and gaining new meaning. As a result of the analysis of scientific and educational literature, three stages of formation of basic general professional competencies of future engineers were identified: initial, basic and final.

The content of the stages of formation of general professional competences of future engineers is presented in the block diagram.



We have chosen system and competence approaches that allow us to consider the teaching process of the general physics course as the most optimal basis for the formation of professional competence of the future engineer. The developed structure of the implementation of the professional direction of the general physics course consists of the following blocks: goal, teacher, content, form and method and tools, student, assessment and correction.

So, at the initial stage, the intermediate goal is to expand students' understanding of the problem area as a set of theoretical materials, conditions of educational tasks and ways to solve them. As a result, the teacher was given the following tasks: to compile the material in the general physics course from the point of view of the competence approach; systematization of educational problem solving tools; generalization of practical knowledge of mathematics and computer science necessary for solving educational problems; helping to create a "state of success" in solving educational tasks.

At the main stage, the intermediate goal is to develop students' ability to apply their knowledge and skills in solving educational and professional tasks. This goal sets the following tasks for the teacher: to develop the ability to analyze a problematic (production) situation; formation of students' interest and ability to find additional necessary material on their own; to form the ability to independently choose a sequence of problem solving; to imagine a problem situation, to form the skill of obtaining a numerical description.

At the final stage, the intermediate goal is to develop the ability to independently apply knowledge and skills in new situations. In accordance with these goals, the teacher was assigned the following tasks: forming the ability to evaluate one's own knowledge and skills; formation of the ability to create algorithms for solving educational (production) problems based on generalization and systematization; formation of the ability to evaluate the obtained solution; actively involve students in the process of structuring the studied material.

In short, the formation of the basic general professional competences of future engineers and tasks oriented to professional activity in the course of general physics will help to gradually form important professional qualities of the future engineer.

List of references

1. Носиров, Н. Б. (2022). Физика фанидан муҳандислик масалалари ечишнинг ўқув-методик таъминоти ва унинг босқичлари. Integration of science, education and practice. Scientific-methodical journal, 3(10), 98-103.
2. Begmatova D.A., Nortojiyev A.M., Khudayberdiyev S.S., Mahmadiyorov 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.
3. 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.
4. Фахертдинова Д.И. Межпредметная связь в формировании компетентностного специалиста при изучении физики //- Орел: Орел ГТУ, 2009. - С. 148-150.
5. 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.
6. Мирзабекова О.В., Соболева В.В., Агафонова А. Формирование проектной деятельности при обучении физике студентов инженерно-строительных специальностей // Человек и образование. – 2013. –№ 1 (34). –113–116 с.
7. Nortojiyev, A. M., Begmatova, D. A. (2021). Fizika fanidan laboratoriya mashg ‘ulotlarini fanlararo integratsiya asosida o‘tkazish usullari. Academic research in educational sciences, 2(CSPI conference 3), 105-107.

8. Mukhamadalievich, N. A. (2022). The method of conducting practical classes in the subject of physics in technical higher educational institutions through the method of designing objects of professional activity. Asian Journal of Research in Social Sciences and Humanities, 12(5), 350-354.
9. Худайбердиев, С. С., Нортожиев, А. М. (2022). Техника олий таълим муассасаларида физикадан амалий машғулотларни лойиҳалаш методи орқали ўтказиш усули. Journal of Integrated Education and Research, 1(7), 104-109.
10. 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.
11. 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.
12. 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
13. Федоров И.Б. Инженерное образование: проблемы и задачи // высшее образование в России. -2011. - №12. - С.54-60.
14. Берденникова Н.Г. Методическое обеспечение процесса обучения как фактор повышения качества образования в вузе: дис. ... канд. пед. наук: 13.00.08 / Берденникова Наталья Григорьевна. - Санкт-Петербург, 2007. - 172с.