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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

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ABSTRACT

The article shows the methodology of conducting practical classes in Physics in technical higher educational institutions through the method of designing professional activities. In the preparation of specialists in the field of architecture and construction, the specific features of the design method, the stages of its organization, and its direct application are given a clear example. It is also mentioned that the effective application of this method in the educational process will ensure the development of professional competence of future builders-engineers and their integration into general engineering disciplines.

KEYWORDS: *Design Method, Physical Science, Physical Training, Competency, Professional Activity Field, Heat Transfer, Convection, Integration.*

INTRODUCTION

The president of the Republic of Uzbekistan emphasized the construction sector as a priority direction, in particular the construction of new buildings and structures, and the issue of training highly qualified personnel as defined in the framework of the action plan adopted by the president of the Republic of Uzbekistan. In recent years, huge construction and creative work have been carried out in our country and the demand for qualified personnel in this area is growing. Therefore, the effective organization of the training process of future builders-engineers, the improvement of Physical Science in the mastering of general engineering disciplines on the basis of orientation to the specialization, and through this, the development of professional competence of students on the basis of integrated educational and Design Technologies is one of the urgent tasks.

Material and Methods. The integrity of the educational process of training specialists in the direction of architecture and construction in technical higher educational institutions is achieved through the links of Science and integration. The science-based approach to teaching allows students to independently acquire knowledge in various fields of Science and Production, Group them and focus on solving a particular professional problem. In this case, the boundaries between courses and subjects are variable, which allows students to form an integral system of knowledge [1]. The fundamental essence of physical knowledge is that the knowledge that is formed by students in technical higher education institutions in physics lessons becomes the basis for the study of general technical and special Sciences, and the development of new techniques and technologies [2]. 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 rounded

up, and the disciplines taught combine a general construction methodology focused on science-related communication [3]. The success of the implementation of the method of designing professional activities in physics classes is due to the cooperation of professors and teachers of natural and professional Sciences [4]. To ensure this, the professor-teacher of physics must have a clear understanding of the following [5]:

* Knowledge of the content of fundamental principles of nationwide science;

•Correct interpretation of physical laws, concepts, definitions used in nationwide science blocks.

This allows eliminating the uncertainty in the interpretation of the same physical concepts by professors from different blocks of science. In the didactic model of the method of designing professional activity units, internal and external relations are distinguished. Internal communication is the result of the analysis of the content of the general course of physics with the aim of determining the leading rules and the main connecting elements in it. External communication is the structural and logical analysis of the topics of special subjects in the curriculum, the distinction of their content to the degree of interrelation with the basic laws, concepts of physics, and the determination of the basic interrelated knowledge necessary for the training of specialists in the study of physics [6].

The organization of vocational-oriented teaching of physics on the method of designing professional activities objects consists of four stages [7].

Stage I-when studying a new material in lectures, the teacher forms a problematic situation in professional activity and, together with the students, divides the physical essence and sets out the ways of solving this problem based on physical theories;

Stage II-the student collects skills for the implementation of the method of designing professional activity units in a certain form on various subjects of the physics course;

Stage III-the student already understands the necessity and importance of physical knowledge for the future professional activity, and organizes his activities in all different forms of thinking, designing and;

Stage IV-independent activities of students on the wide use of this method in the performance of course and diploma work.

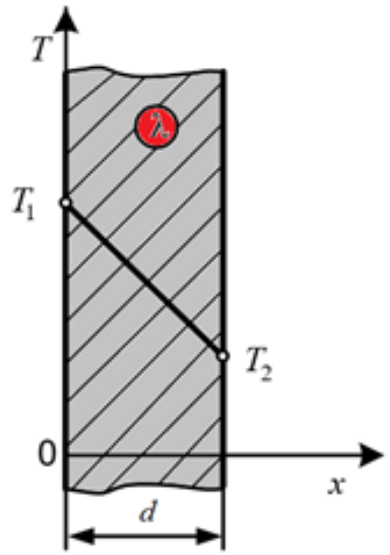
RESULTS

The transfer of students of technical higher education institutions through the method of designing practical classes in physics provides them with direct direction to construction areas and provides the basis for the formation of professional competence [8]. Also, as a result of the design method, integration into national science is ensured [9].

The solution to a practical problem in physics, which is directed directly to the construction areas through the design method, is shown in Table 1 as a clear example.

1-table.

№	Implementation of general methods	Actions to be performed
Calculation of the teplophysical properties of buildings and structures		
1.	Putting the issue:	*Flat wall thermal conductivity*$\lambda = 0{,}25\ W/m \cdot K$*őthe country is made of material. Wall thickness*$d = 50\ mm$*. Temperatures of the wall on the surfaces, respectively:* $T_1 = 50^0C$, $T_2 = 20^0C$. *Find the density of the heat flow passing through the flat wall (Figure*

		1) [10].
2.	Distinguish the object or its individual derived elements:	*flat building wall*
3.	Separation of heat transfer types affecting the object or its separately obtained elements, which are considered to be removed from the outlet:	*due to the heat transfer to the flat wall, thermal conductivity is observed.*
4.	Display of heat transfer types and physical phenomena:	*thermal conductivity, convection.*
5.	The object or uning separately is an element describing the nature of the graph model.	 1-picture. Graph of the temperature dependence of the process of thermal conductivity on a flat wall.
6.	Determination of physical dimensions, which represent the types of heat transfer that are emitted depending on:	heat resistance, heat flow density.
7.	Characterization of physical laws that characterize the nature of an object or some of its derived elements under given conditions.	*Thermal resistance of thermal conductivity in a flat one-layer wall:* $$R_t = \frac{d}{\lambda}$$ *Density of heat flow passing through a flat wall:* $$q = \frac{T_1 - T_2}{R_t}$$
8.	Solve the system of equations obtained and determine the values of the physical quantities sought:	$$R_t = \frac{d}{\lambda} = \frac{0{,}05}{0{,}25} = 0{,}2\ \frac{m^2 \cdot K}{W}$$ $$q = \frac{T_1 - T_2}{R_t} = \frac{50 - 20}{0{,}2} = 150\ \frac{W}{m^2}$$
	Comparison of calculated sizes corresponding to the design rules and technical	*according to the design rules and technical*

9.	conditions:	*conditions,*0,2 $\frac{m^2 \cdot K}{W}$*for value, the heat flow is correct.*
10.	As a result of the design activities, integration into national science is ensured:	*construction physics*
11.	Types of competency that are formed as a result of design activities:	*special competence;* *technological competence.*

DISCUSSION

V. V. Soboleva believes that the effective use of the method of designing objects of professional activity in physical training is aimed at coordinating them with the topics of future diploma projects and taking into account the physical and technical characteristics of the object, as well as mechanical, acoustic, physical, light parameters of the construction site [11]. According to E.B.Shoshtaeva, science represents the unity of professional activity in the communication itself, the process of communication of educational sciences, reflecting continuous and holistic phenomena. E.V.Perexosheva defines integration as the process of combining Educational Sciences on the basis of knowledge and technological problems. A.V.Khutorsky, E.V.Perexojeva, Observing the concepts of N.A.Muslimov and other researchers, those who work in this field, students of technical higher education institutions consider professional competence as the organization of a union of personality qualities, which subsequently helps them in the successful implementation of their knowledge, skills, and qualifications in engineering activities. Gareth Jones believes that in the development of the professional competence of students in the course of physics, it is necessary to take into account some basic aspects of communicative competence and personal qualities [12].

CONCLUSION

In the preparation of specialists in the field of architecture and construction in technical higher educational institutions, the mechanism of the development of independent educational activities of students, and the implementation of methodologies based on practical issues and projects leads to the development of their professional competence through adaptation of science projects and information-didactic provision.

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