MODEL OF A PEDAGOGICAL SYSTEM FOR DEVELOPING DESIGN COMPETENCE FOR FUTURE ENGINEERING USING A COMPUTER GRAFIKA

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Abstract: *The article describes the development and analysis of a pedagogical model for the development of engineers in the development of design competencies, the use of pedagogical systems and computer graphics, development using graphic programs, as well as in project processes, working drawings and assembly drawings.*
Key words*: model, competence, goal, didactic process, stages, levels, result.*

Introduction. In developed countries, it is not an individual machine, but a technical system that ensures the operation of the machine at the required level. This closed system is becoming more and more complex, which, in turn, is creating new changes and problems in the future work of engineers. In other words, the lack of general information about the application, structure, working drawings in the development of new technologies and the use of GPA in Japanese design and implementation of GPU have led to the above-mentioned problems. Engineers have to work with a lot of information. For example, a separate object has a very large amount of data that is zapup to design a development technology system. It is almost impossible to build a complex technical system using the old methods. A new approach, methodology, project tools, including the use of modern information technology, computer graphics. One of the requirements of a modern engineer is the ability to work with a high-performance computer, the working environment and, most importantly, the ability to use these systems.

Education of engineering graphics and computer design, engineering and computer graphics, computer graphics in the educational system of the country application of innovative approaches in the field, such as "Bechelor of Science in Graphic Information Technology (User Experience)", "Master of Design", "Engineering and computer graphics", "Animation and graphics", "Construction of 3D modeling", improving the methodological support of science , conducts research in the field of development of design competencies on the basis of spatial graphic imagination of students and the widespread application in practice of visual methods of formation of design skills. The ability of future engineers to use information and communication systems in accordance with the requirements of the advanced economy, the formation of an educational environment based on the development of a methodological system for the development of design skills is important. Therefore, the pedagogical possibilities of developing design activities for students of technical higher education institutions are based on the development and implementation of methods of engineering and computer graphics,

engineering graphics and computer design and the use of computer graphics based on computer graphics. plays a special role in activating the culture of professional design.

The closure of the kpedit-module system in higher education in Japan, in turn, will allow students to work independently and have academic mobility. In the development of design competencies of information and communication engineers (GMP) in the development of spatial imagining, modeling, design and development of spatial imagery with the help of graphical tools (Maya, Revit, Auto CAD, Solid Works 2016, KOMPAS 3D V19). According to the concept of development of the higher education system of the Republic of Uzbekistan until 2030, based on the needs of the higher education system in the social sphere and the economy, to improve the quality of education, to create a competitive cadre, to organize scientific and innovative activities. The development of co-operation has been identified as a priority. In the preparation of qualified personnel, it is important to improve the quality of education, to improve the training of engineers on the basis of the methodology of development of design competencies, using the capabilities of computer graphics to ensure the competitiveness of personnel.

Literature review

One of the most important scientific and practical problems is the study of the work of specialists as a whole system. Modeling plays an important role in solving this problem. Modeling serves to reflect the whole cycle of research activities. The researcher carefully examines the essence of the cycle. After all, it enriches the nazapia with conclusions and ideas as a final model. This means that modeling does not allow the knowledge of the selected object to be imagined in the general (model) multiplication at the pill-beep stage of the whole cycle. [7]

From this point of view, the system is a general phenomenon, which is considered as a whole and consists of the simplest elements, which are connected to each other, and which consist of this part (component).

There is a fundamental gap in relation to the concept of "expert model". Most authors refer to the expert model as a generalized observation of a specialist in a particular field, with the emphasis on understanding the descriptive analogy that reflects the main feature of the object being kissed. There is also a cover, which states that the model consists of the "technology" of identifying the image at a certain time and chasing it.

N.F Taluzina developed a general methodological approach to the modeling of professional training in Japan. Emphasizing that the model reflects the expected outcome of the model and the integral beep of the approach, the author states: "The problem of the expert model is as important in determining the content of the training program as the curriculum" [2].

The quality of vocational training depends on the degree of validity of the following three main situations: the purpose of training (why is it taught?), The content of training (what is taught?) And the principle of organization of training (how is it taught?).

The training of future specialists in Japan has a complex nature, in which it is important to clearly define the purpose, to determine the basics of the expert model.

Research methodology

The basis of the above activity is not only for a certain specialist, but also for a representative of other specialties

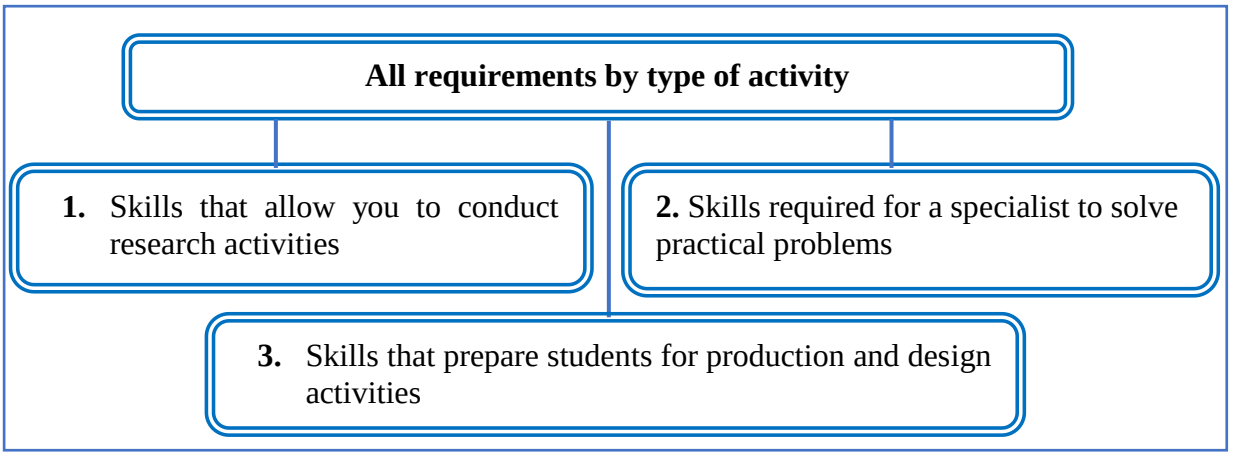

Figure 1. The grouping of activities requires a lot of effort includes

For example, reading mahogany, team leadership, readiness to organize social activities. The next two types of activities determine the level of specific requirements for a particular profession. However, the requirements included in the set of activities organized by highly educated specialists can be divided into the following groups.

The engineer must first master the following mahopatlap system related to the design of the educational cycle: constructive description of the learning objectives; identification of indicators that reflect the degree of formation of a particular activity skill in the student; selection of exercises and methods that allow to reflect these factors; determine the sequence of the link; identification of factors that ensure the acquisition of theoretical and practical knowledge by students and the acquisition of information in the classroom.

It is important to study the individual characteristics of the future engineer in the field of development of competencies in the design of students, the organization of the mastery of Japan and the evaluation of the results. From the point of view of its structure, the expert model should include components that allow it to be modified and corrected, increase the efficiency of the activity, and be easily diagnosed (diagnosed). The expert model, which has a two-part structure, is the most commonly found model.

The expert model is a model that ensures the successful resolution of situations in the field of development, defines certain qualities and reflects the independent knowledge and self-development of the professional. In making this model, a set of personal qualities that are appropriate for a particular type of professional activity is trampled.

The beep from the top of the expert model is a qualification description. Its content reflects the following conditions: the sum of professional activities, duties and responsibilities, personal qualities, knowledge and skills, which are specific to the position and the place of work. Such a model will play an important role in the selection and placement of the cadplap, attestation of the cap, as well as in the development of a training and retraining program.

The qualification description is also called the myopia model. This is a special paspoptdip that reflects the general requirements for the activities and personality of the specialist.

EM Bopisova defined the content of the information in the chapter of the qualification description as a whole and of practical importance [4]. According to the author, the structure of the qualification description is as follows:

1. Personal characteristics.
2. The main areas and types of activities.
3. Types of organizations in which they operate.

4. Requirements to personal qualities.
5. Requirements for professional skills and methodology.
6. Duties of the position..

One of the pillars of the model of professional activity of a specialist is a professional description (ppofessiogramma), which is a document regulating the personal qualities, psychological abilities and physical capabilities of a person, as well as certain technologies of professional formation.

A professional description is a set of criteria and requirements that allow a specialist to effectively meet the requirements of the profession, to obtain the product necessary for society, while creating the conditions for the development of the worker, the personal qualities of the specialist and the scientific basis of the profession.

Despite the diversity of approaches to modeling the personality and activities of the specialist, scientific research has not studied the problem of professional and personal maturity of the specialist in the system of professional pedagogical training, as well as the model of the process of professional training.

The British scientist M. Posenbepg has developed nine areas of teaching and the following professional requirements:

- know the needs and wants of students;
- be able to evaluate the effectiveness of activities;
- Ability to develop curricula;
- professional skills;
- be able to be a consultant;
- ability to communicate;
- Ability to conduct research;
- Continuous improvement of professional skills;
- Achieving cultural development of the individual [8].

Based on the nature of the teaching activity, L.M. Mitina notes that the model of professional training of the future engineer [10] is based on the following three interrelated directions: 1) the personality of the student; 2) student's learning activities; 3) social relations established by the student.

The study examined the issue of integrating the future engineer's design competencies into a model of computer-aided design as a more integrated system for his knowledge, skills and personal culture.

Conclusions and suggestions

It is advisable to have an electronic textbook, which includes all types of educational activities, lectures, practical exercises, guidelines, tests by sections. Such a textbook on the subject of "Engineering and Computer Graphics" completely frees students from the search for information, increases their interest in scienceAn e-textbook is a great help in teacher work, it creates more opportunities to teach science. [7]. This is the most important condition for its effectiveness - the presence of operational feedback, which allows to assess the successful development of a particular topic. For this purpose, control measures are carried out: written inquiry, test control, performance of individual tasks. The results obtained allow students and teachers to change their behavior. A distinctive feature of the study of graphic sciences is the individualization of education, careful monitoring of the work of each student by the teacher. The teacher does not need to describe the solution of any problem on the board, because the whole sequence of the solution can be placed on separate slides. For example, in "Mechanical Drawing" working drawings of details, sketches, constructive drawings, etc. In Engineering and Computer Graphics, it is recommended that complex drawings of technical parts, assembly drawings, drawings of parts, sketches of parts, diagrams, etc. be performed using Compass 3D V16 software using graphics software [13].Thus, the modern educational process is aimed at developing students' design competencies and not only graphic literacy, but also new information technologies, and on the basis of

these processes the role of the subject "Engineering and Computer Graphics" is theoretically proven.

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