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Actual Design Solutions in Educational Process and Scientific Activities

Under the university entrance, students already have the skills to work with computer technology, as well as methods of searching for information using the global network. Informatization of society, on the one hand, reduces the time for training in the use of technology, on the other hand, there is now an urgent need to learn how to analyze and process the information received, and also to update these methods.

In the conditions of constantly developing information and communication technologies (ICT) on the basis of the development of computer technology, the problem of forming a high level of knowledge and increasing cognitive activity of students is becoming more urgent. Since there is a clear correlation between the efficiency of ICT use and the pace of economic development of states, as well as the level of its competitiveness, the training of specialists with high skills in mastering modern technologies is a priority. In modern society, the level of development of the country is estimated according to the level of its information potential, therefore the most countries of the world make a lot of efforts to optimize the information sphere.

To successfully solve problems that inevitably arise in the future, in a context of uncertainty, university graduates and teachers must have the ability to change the characteristics of thinking in their discretion. Acquaintance with actual design solutions in the process of teaching allows not only to discover new possibilities for designing and transforming the living space, but also to gain an experience in making creative decisions, without which it is unthinkable to obtain new knowledge and research activities. Designer thinking is characterized by the ability to embody virtual ideas through language into geometric and plastic images, solves functional, planning and constructive tasks. Their thinking includes graphic and imaginative characteristics.

Studying of design methods and means allows to prepare specialists with developed complex of creative abilities, formed by aesthetic views, possessing project language, ready for constant self-development and self-realization. Design activity is aimed at visualizing information for mass distribution using cinema, television, creating graphic styles of enterprises and elements for industrial products, the subject environment, as well as designing complex objects in order to create a harmonious environment. The object of this activity is the process of creating a harmonious aesthetically perfect subject environment in the social and cultural sphere of human life, as well as competitive products.

Throughout its existence, the Chair of the Machinery design fundamentals department of the National Mining University actively implements modern ICT in the educational process and scientific activities. Beginning with the first-year course, the staff of the department gives students of the mechanical and engineering faculty the

following information disciplines: informatics, information systems and technologies, computer technology and programming, computer and engineering graphics. Within these disciplines, students receive the skills of working and developing modern information systems, as well as creating graphic primitives of varying degrees of complexity in modern graphics packages, computer-aided design and electronic document management systems. These disciplines provide basic training in the use of information systems for its further advanced study at senior courses.

Starting from the second year within the course design on the disciplines "Theory of Machines and Mechanisms", "Machine Parts" and other specialized disciplines, students realize the knowledge gained in the first year for modeling and designing machine parts and planning production buildings in modern computer-aided design systems: Ascon Compass-3D, Autodesk AutoCad, Autodesk Inventor, PoweShape in the framework of academic licenses obtained for these software products by the Department.

Within the framework of this design disciplines, students make up a script for a video clip presenting the administering sub-department or their scientific work. After that they get skills and knowledge on working with recording audio and video equipment. In the editing programs, the video clip is assembled and special effects added to emphasize the key points of the video.

The essence of educational practical design works is an independent creative and research activity that unites the cognitive and transformative activity of the student, while ensuring the development of creative abilities and thinking, forming his value orientations.

In the context of introduction of information technologies in all spheres of human activity, the study of the disciplines of the information cycle opens up multifold possibilities for the future specialist to solve a wide range of problems from different subject areas, involving ICT.

In this connection, the problem of organizing training in design decisions in higher education not only in the study of specialization disciplines with the use of information technologies (computer science, CAD, etc.), but also disciplines that did not previously use technical and software tools, became currently important.

The disciplines of the design direction contribute to the training of future specialists as competent professionals who have the knowledge and skills of research work: the ability to quickly navigate information flows, the ability to create new models, and cognitive and practical innovative models of new products, services, technologies in production and technological, economic, educational and other fields focused on innovative ways of thinking and acting, competitive and mobile who have creative activity, a complex of knowledge and skills in the field of design, successfully implemented in educational institutions and in the real sector of the economy.