

# Important factors of preparing students for professional activity on the basic of integration of graphic sciences

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**Abstract.** The article analyzes the important factors of preparing students for professional activity on the basic of the integration of graphic sciences and the results of research work carried out by several scientists in this field. On the basic of these analyzes, the integration of graphic disciplines was developed and a questionnaire on professional activities was conducted among students, and their results are also covered in the article. The teaching of graphic sciences, which is a key factor in the development of students in the field of graphic design, design and their integration, is based on clear evidence and conclusions and recommendations that in the future these personnel will play a key role in mastering the field and their professional activities.

## 1 Introduction

Shaping students' preparation for future careers is continuous and complex. Therefore, in its organization, special attention is paid to the study and consideration of factors influencing this process. A factor (Latin "factor" - to do, produce) means everything that affects this or that process. The influence of N.E.Kasatkina, A.N.Koksheneva considered the factors influencing the development of the student's personality and self-determination of young people.

Hence, R.A. Parfirieva states that it is carried out in the process of development of the student's personality and is influenced by the following factors: macro factors (society and the state); mesofactors (ethno-cultural conditions in which a person lives and develops); micro factors (family, child care and other socialization institutions).

N.E.Kasatkina, TM Churekova distinguish all the factors in the process of self-determination of young people: General (socio-economic living conditions of people, spiritual culture of society, regional (specific features of economic and demographic development of the region, career choice of young people and influencing career choice); Psychological factors are divided into three groups:

- mass media, etc.)
- Factors arising from the age characteristics of young people;

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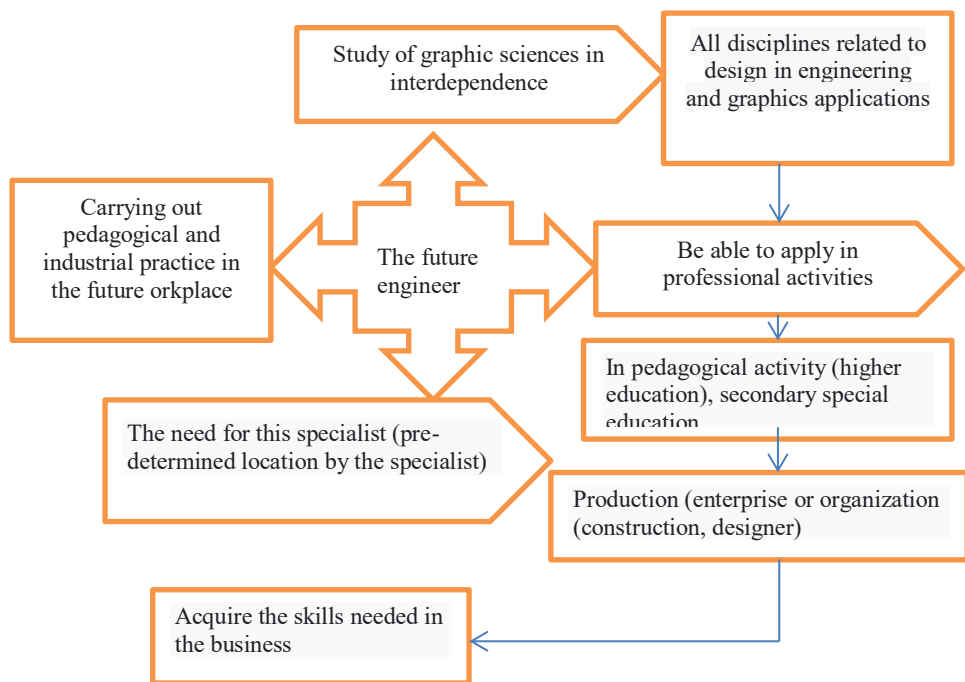
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- Factors influencing the formation of value orientations;
- Factors of personal nature (tendencies, abilities, interests, psychophysiological qualities, general level of education).

A.N.Leontiev considers it expedient to divide all factors into two large groups: purpose (factors that depend on the economic, political and cultural characteristics of society). Subjective (area of motivation and needs of the person, values, personal characteristics, abilities). Based on the above examples, it is possible to talk about the different approaches of the authors in grouping the factors influencing the process of personality development [1-4].

E.A.Koksheneva considered it expedient to distinguish three groups of factors, given the existence of classifications in the consideration of factors. This classification is not rigid and is based on rules about the ability to take these factors into account and manage in the context of the learning process. The classification he uses includes the following groups: socio-economic factors, psychological factors, organizational-pedagogical factors. The group of socio-economic factors influencing the formation of professional readiness of students includes: the state of the labor market in the region (employment opportunities); the prestige of education and profession in society and in a particular region; demand for specialists; the social status and level of education of the parents; the financial means of the family.

Integration of graphic sciences - the use of one in teaching the other, the application of their theoretical foundations in the practical process, based on the organic and theoretical connection of a number of graphic sciences, while organizing the student's professional activity in a clearly specialized direction [3]. Teaching graphic sciences in an interrelated way not only increases the effectiveness of the lesson, but also increases the interest of students in science, understanding the purpose and essence of science in a short time, mastering it and creative work in a specific field.



**Fig. 1.** The form of the necessary steps in the preparation of the future specialist for professional activity.

Fig. 1 above shows the necessary steps in the preparation of a future engineer for professional activity. This will allow students to master engineering in the first place and apply it in the next stage in the specialty. For example, students majoring in "Use of hydraulic structures and pumping stations" in the first and second years study the subjects "Engineering and Computer Graphics", "Computer Graphics". In subsequent years, ie in the third and fourth years, students will be able to apply their knowledge of drawing and engineering in the study of special disciplines, such as "Introduction to the science of hydraulic structures", "Theoretical Mechanics" and other disciplines.

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An example of the process of explaining the subject "Engineering and Computer Graphics" in this area using the subject "Computer Graphics" and its elements for example, in addition to explaining the process of creating a surface on a simple board, graphic programs can be explained using AutoCAD, 3DS MAX, SolidWorks. The integration approach is very important and effective in teaching graphic sciences, given that it has features such as construction.

The language of engineering graphics is a composite expression of technical and technological culture. The synthesis of this language and the subjects of engineering specialization expands the general engineering culture of the future specialist personality. In addition, the process of studying engineering graphics itself helps to significantly expand the general and professional culture of future engineers, develops spatial and imaginative thinking, allows to express their ideas in a minimized form, helps to visualize them.

This, the tendency to integrate graphic knowledge in the study of technical sciences of professional significance is aimed at solving the problem of quality of training at the university, emphasizing the urgency of the problem of effective use of educational potential in the study of engineering sciences. graphics in universities. Therefore, it is necessary to pay special attention to the integration of higher technical education, training of engineers, pedagogical understanding of his professional skills in the future, which will serve as a basis for solving this problem of society.

The two closely interrelated but mostly opposite processes - differentiation and integration - have had and continue to have a major impact on the formation of the world's scientific landscape. These two processes can be linked to one of the most important laws of development of human society. At the current stage of development of society, the process of integration, which covers various areas of human activity (economy, politics, science, education), prevails. The processes of integration and differentiation are in dialectical unity. There can be no integration without differentiation. Integration and differentiation (as two sides of the development process) in human objective activity are also closely related to each other. Hence, integration in scientific activity can lead to differences in people's objective activities. Examples are engineering design, computer diagnostics, biotechnology [5-6].

The processes of integration and differentiation are also inherent in education. These processes correspond to two tendencies of human cognition, on the one hand, the depiction of the whole world, and on the other hand, a deeper and more accurate study of the laws and characteristic features of various structures and systems. At the present stage, integration dominates stratification and is seen as a promising area for improving modern education.

The process of integration is seen as the interaction of the content of different disciplines in order to form a multifaceted complex system of scientific knowledge among

students. Today, integration processes in education prevail for a number of objective reasons. In the context of the development of the global information space, the integration of educational systems of different countries, the recognition of the importance of cooperation in the field of education is becoming a necessary condition for the development of education.

Studies have shown that the synchronization of system interactions is ensured due to the unity of the structures (goals) that make up the system and the teaching technologies at the university. Awareness of integration processes during training is only possible with advanced systematic thinking.

For an expert-engineer knowledge to be mobile, he must be able to process the accumulated knowledge and store it optimally, and these are often models, diagrams, graphs. He must learn to constantly replenish his knowledge and be able to apply it in his practice, viz. use knowledge engineering in their own knowledge.

Each professional must establish relationships between the subjects and objects of the business process, make and implement management decisions in their professional activities as a subject of the management system, develop their professional skills and reveal their creative potential through flexible use. training based on management systems technologies, their complementarity and consistency.

The group of psychological factors includes: motives for choosing a profession; striving for success in business; expediency of actions formed under the influence of a stable system of conscious value orientations; the emotions that come with shaping students' readiness for future careers; will, as a result of which the student can acquire the knowledge, skills and abilities necessary for him in his future professional activity; the presence of personal qualities that will help you to carry out future professional activities.

The group of organizational and pedagogical factors is characterized by the real conditions in which the student finds himself in the educational organization. This group includes: organization of the learning process; level of training; the type of relationship between teacher and students.

In order to study the readiness of students for future careers, we interviewed 36 second-year students and 52 first-year students majoring in "Agricultural Tractor Driver". The analysis of the master's degree in "Engineering Graphics and Design Theory" and the bachelor's degree in "Alternative Energy Sources" showed that according to the Tashkent City Employment Center, as of April 1, 2020 for specialists in Engineering Graphics and Design Theory " There are more than 150 vacancies for "Engineer Designer".

However, there are problems with the training of competitive personnel. If we take the data for the Fergana region, the need for water management specialists is 202 people, for electricians - 148 jobs. that is. workers in these occupations in the labor market are not redundant [7-11].

This, we can conclude that there is a need for workers in these occupations. This is confirmed by the survey

- "How do you assess your prospects in the labor market"
- I am optimistic about the future - 34%
- I'm not sure about the next job - 11%
- I'm sure about the next job - 44%- I will continue to study - 15%.
- difficult financial situation - 19%

"Why did you enter the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers?" to the question. The answers were as follows: I want to have a higher education (diploma required) - 10% I like the specialty obtained at this institute - 54%, etc. 36%. According to the results of the survey, it can be concluded that 54% of students were initially motivated to pursue their chosen profession. To further increase this result, it is necessary to conduct research in this area.

Psychological factors: The idea as a factor determining the psychological readiness of the profession for professional activity begins only after the start of production training, where students learn the basics of the chosen profession. The results of the survey show this. If 28 of the 52 first-year students surveyed had an idea of their chosen profession, 44% of second-year students were confident about their future chosen profession. This means that more research needs to be done to prepare students for professional activities.

How students' perceptions of their future careers are being reorganized is evidenced by data on the dynamics of the quality of education in higher education. Electricity Specialist Group (first year):

The most important values for most of the students surveyed are high financial status, i.e. addressing material well-being factors primarily. Organizational and pedagogical factors. With the transition to training in accordance with the new educational standards, the requirements for graduates, the requirements for their level of preparation for future professional activities have changed. Students should have a specialized professional knowledge base, have developed functional and organizational skills, and skills to apply professional activity technologies.

This, in turn, helps graduates to adapt to their professional activities, to take an active life position. Since the pedagogical process is an integral part of the processes of teaching, education and development, it is necessary to organize it in a way that brings together the processes of learning and the process of acquiring professional skills and competencies. The convergence of these processes directly leads to the planned formation of students' preparation for future professional activities. The curriculum for the professions is structured in such a way that theoretical training is replaced by practical training, where practical skills are formed and students learn to apply the acquired theoretical knowledge in practice [12-14].

## 2 Conclusion

To form the theoretical component of the training, students master the engineering sciences theoretically and practically, first develop an algorithm on theoretical issues and then develop its models in graphical programs, develop the ability to prepare reports and communicate ideas, and are involved in their preparation. In order to develop the skills of research activities, an annual scientific-practical conference is held with the participation of talented students, masters and professors, where students present their work under the guidance of teachers.

Classes for the formation of skills and important professional qualities are conducted using active forms and methods of teaching: games, quizzes, lessons-excursions, lessons-competitions, professional skills competitions, etc. encourage students to be creative.

In order to develop students' social activism, interpersonal social interaction and creative self-awareness, volunteer actions, talent contests, competitions, etc. are held. All this contributes to the social adaptation of the individual in his future professional activity. One of the main factors influencing the formation of students' readiness for future professional activities is the satisfaction from the educational institution and the student-teacher relationship.

We conducted a survey "How satisfied are you with the organization of the educational process?" The results are as follows: Practical lessons - 84%

In general, the quality of training at the institute - 83%

Organization of research work of students in the branch - 81%

Organization and conduct of extracurricular activities - 81%

Use of modern teaching methods in the classroom - 74%

Training material base - 69% The next part of the survey is “How satisfied are you with the relationship at the institute? was the question. Student group curator

-78% Master of Industrial Education Student - 87% Student - Teacher - 80% Student - Student - 80%.

This, according to the results of the study, we received the following conclusions to shape the readiness of students for future careers at the Institute;

- the institute has created favorable conditions for students to study and learn new technologies;

- interaction between students and teachers;

- the period of study is inextricably linked with the future activities of students

- integration of science and industry is established;

- favorable conditions are created for students to engage in research work.

- graphic disciplines are carried out in depth at the institute, and most importantly, on the basis of their mutual integration, the acquisition of the necessary knowledge in the professional activity of the student is established.

In addition, more positive results can be achieved if the results of today's activities at the institute are focused on the further development of research results and their application in practice.

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