

The culture of design as element of technological culture of students

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In the worldwide pedagogical literature the technological readiness of the person to reformative activity is defined by the terms "technological literacy", "technological competence" and "technological culture".

Literacy is defined as existence of necessary data from any area (technological literacy, ecological literacy) [1]. From this point of view, technological literacy is existence of technological knowledge and understanding of the nature of technological activity, abilities in the field of implementation of projects, understanding of communications between production and society, and also impact of production technologies on environment.

The detailed description of requirements to technological literacy of the American school students is provided in fundamental work [2].

In recent years the term "competence" is widely used. Competence is the skill acquired as a result of training coordinating knowledge and abilities with ability to put this knowledge into practice. Competence includes cognitive level (knowledge), operational and technological level (skills), motivation, an ethical component and style of behaviour.

In the russian pedagogical literature the term "culture" is widely used. There are hundreds of definitions of the term "culture". According to [1], the culture is:

1. Set of the material and cultural wealth created and developed by mankind during its history;
2. Perfection degree in mastering something (e.g. the standard of speech, behaviour, work etc.).

In the russian pedagogical literature the technological culture as the culture of reformative activity is considered in two meanings: as technological culture of production [3] and as technological culture of the person [4, 6, 7, 8].

In this article the technological culture of the person is considered as perfection degree in mastering of the general principles of reformative activity.

The technological culture is the culture of reformative, creative and nature corresponding (ecologically justified) activity and includes knowledge, skills of reformative activity (cognitive level), the emotional and moral relation to this kind of activity (affective level) and readiness to work taking into account responsibility for the actions (cognitive level). Considering that in the community individual carries out functions of citizen, worker, owner, family man and consumer [5], the technological culture includes 10 sides [4,6,7,9] as follows:

1. Culture of work;
2. Graphic culture;
3. Culture of design;
4. Information culture;
5. Entrepreneurial culture;
6. Culture of the human relations;
7. Ecological culture;
8. Culture of the house;
9. Consumer culture;
10. Project and research culture.

The summary of the sides of technological culture of the individual was considered in work [6]. The subject of this article will be an important side of technological culture of the person - culture of design. This

includes knowledge, abilities and readiness to use the principles of ergonomics, aesthetics, design and creative processing of materials for creation of the harmonious environment for the individual and for ensuring competitiveness of production.

Hence, formation of culture of design is an important issue of training of students as future teachers of technology. In our opinion, the solution of this task is introduction of the design approach, which has powerful educational potential, promotes creative development of students, independence education in decision-making and active relation to the world.

Design approach in training of future teachers of technology assumes training with methods and means of design [8], in which various forms of public work and knowledge, concerning the relationship of the person to himself, subject and his environment, are integrated.

The purpose of design training of future teachers of technology consists in training of the competent teacher focused on projection ways of thinking and activity, competitive and mobile, creative and active, with a complex of knowledge and abilities in the field of the design, successfully realized in educational institutions and in real sector of economy.

There are several issues of design training for future teachers of technology:

- to train the teacher getting a complex of special knowledge and abilities in the field of design, ways of design activity and design methods (the design analysis, projection design etc) and creative thinking and world view;
- to form the professional teacher on the basis of a rational combination of the design, technical, art and economic directions of education through integration of intersubject communications and on the basis of special knowledge and application of this knowledge in projection design activity;
- to impart skills of projection design activity to the teacher to find the solution of actual tasks in interaction of social, functional, aesthetic, technical and economic factors, taking into account the latest development in the field of materials science and the technology of production;
- to train the teacher as organizer of project (design) activity of the school students, who has high level of culture of design as well as technological culture as a whole.

Successful realization of design approach when training future teachers of technology requires the solution of a number of theoretical, psycho-pedagogical and practical questions, including creations of special system of pedagogical conditions which elements are as follows:

1. Use of accurately built structure of the content of design training of future teachers of technology which includes:

- development and introduction of a complex of special disciplines in technological training of students (e.g. "Design of products and a basis of decorative composition", "Design of products", "Art design of a suit", "Interior design", "Phytodesign", "Landscaping", "Image and culture of clothes");
- integration of knowledge and skills acquired during studying of related subjects of profiles and the specialist disciplines, creating prerequisites for educational projection design;
- theory and practice interaction as a factor of development of creative (design) thinking of students (theoretical knowledge stimulates development of design thinking in changing situations of practical projection design).

2. Introduction of innovative technique of the organization of design activity of future teachers of the technology which includes:

- optimization of educational process by means of the complex training carrying out integration of traditional forms, receptions and training methods with the methods activating creative thinking, helping to develop ability to solve the new problems, promoting productive cerebration, conscious search of a solution and creation of an ideal image and its realisation in real products, including: problem and search methods and methods of development of experience of creative activity of students (design analysis, construction, modelling, projection design method). Thereby the projection design method is the main

method;

- use as the main tutorial – individual and collective creative design tasks and the design projects having the real personal or public importance, and requiring knowledge and abilities not only from design and technology area, but also from related subjects. As additional resources of the training, natural samples, models, computer and multimedia facilities can be used.

3. Introduction of an adequate quality assessment of the design training of students, including:

- development and introduction of a complex of criteria of the design activity of students;

- use of portfolio of design activities of students as method of an assessment of achievements and development of students in the field of design.

4. The organization of research and innovative design activity of the students providing:

- inclusion of students in real process of innovative research activity for the solution of actual problems in interaction of social, functional, aesthetic, technical and economic factors, in specially developed infrastructure of higher education institution (student's educational scientific innovative complexes, design bureau, creative workshops etc.).

- realization of design activity of the students similar to activity of the professional designer: implementation of design projects for enterprises and organizations (design of product, interior, suit etc.), implementation of design projects for educational institutions (development and production of thematic corners, stands for schools, establishments of additional education, development of design projects of an interior of a school class, workshops).

Summarizing the material stated in article, we emphasize that realization of ideas of design in training of students, as future teachers of technology, promotes the strengthening of professional as well as worldview and personal forming orientation, promoting thus the formation of culture of design in students as a part of general technological culture.

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