

Typical Mistakes that Occur in the Process of Learning to Draft

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Abstract - This article examines the scientific and methodological foundations of typical mistakes made by students in the performance of graphic work on drawing. Preventing and eliminating methods of such mistakes were suggested in this paper, which help to improve the cognitive activity of students.

Keywords - Mistake, Typical, Graphics, Skill, Experience, Drawing, Line, Standard, Correct, Incorrect, Images.

Recently, a number of works are carried out on the qualitative assimilation of knowledge by students. In particular, the effective implementation of targeted activities of academic lessons, activities aimed at independent learning, mandatory graphic tasks, etc. becomes the subject and essence of the education system. Herewith, a great attention is paid to the formation of such qualities as activeness, independence, initiativeness, and creative approach to work, curiosity, independent acquisition of knowledge, and the necessary conditions are created for this.

There are a lot of mistakes made by students in the process of learning and mastering the drafting. Nowadays, it is necessary to study and investigate the causes of such mistakes. Some of these reasons are typical and technical mistakes manifested in concepts, graphic works of students, which are blindly made and arise for objective and subjective reasons. In this regard, their study and prevention becomes an urgent problem of teaching methods of the subject. Determining the type and causes of such mistakes encourages the development of measures aimed at their prevention. This, in turn, serves to eliminate and solve the

existing and possible negative consequences in teaching drafting and mastering graphic knowledge by students.

Drafting and the theory of descriptive geometry are inextricably linked to mathematical science. Therefore, mathematics is considered as the methodology of these Sciences. In the field of mathematics, there are various studies devoted to the problem of mistakes made by schoolchildren (B.G.Ananyev, D.N.Bogoyavlensky, E.D.Bazhovich, etc.); teaching methods (L.S.Ivanova, 1988, V.A.Kolosova, 1997, O.A.Tarasova, 2004, etc.).

A.K.Artemov connects the causes of mistakes with external factors and focuses on the development of appropriate didactic means of preventing mistakes made by students.

M.I.Zaikin, V.A.Kolosova and I.S.Grigoreva argue that the incident with warning functions is insufficiently studied.

Moreover, a number of scientific researchers have been held aimed at eliminating and preventing typical mistakes, as well as taking into account pedagogical features of such mistakes in a number of other disciplines.

The causes of typical mistakes were identified, as well as, to a certain extent, the factors; ways of preventing and eliminating them were developed. However, in some textbooks, manuals on training in drafting there are also graphic images made by correct and incorrect solutions, aimed at preventing some possible typical and other mistakes along with the issues of teaching drafting, which will serve as an impetus in the study of the chosen problem on a scientific basis and finding the right way.

Even if such short positive suggestions and reasoning on some topics of the educational literature are not able to solve all the main problems, it will help to distinguish typical mistakes from other mistakes, as well as to form at least a general idea on the initial ways to eliminate them.

As an actual problem, speeches at international and national scientific and practical conferences are published in the form of “abstracts” in the collections of conference materials. The problem should be widely studied; the results and recommendations should be announced as a separate training manual. Thus, typical mistakes do not appear by themselves, they appear due to specific reasons. Therefore, it is recommended to first establish the causes of their occurrence, and then take appropriate measures.

Accordingly, in the qualitative development of the subject of drafting, it would be advisable to pay attention to the above sources in the development and systematization of ways to eliminate typical mistakes made by students when performing a drafting, in determining where and under what conditions, in what processes they occur.

This attention primarily requires: the identification of mistakes made in the execution of drafting, and reasons of their occurrence; evidence on a scientific basis; finding ways of eliminating the mistakes, as well as analysis of published and introduced in educational process of educational literature, teaching AIDS, didactic materials related to the educational process on the basis of the requirements of the latest “State standards” in the “unified system for design documentation”, study of the shortcomings and taking measures to prevent them.

It is known that draft is a means of transmitting data and receiving information. In production, it is used as technical documentation in all processes: design, manufacture, control, redevelopment and repair of products. A mistake made in one of these processes leads to the fact that the product from which it was developed is defective. This requires that the technical documentation, that is, the drafts

were error-free. When drafting and reading it, the same requirements as the “State standard” are met.

Thus, textbooks on drafting in secondary schools, which teach drafting and reading it, designed to give fundamental knowledge, should be by all means invaluable. However, such textbooks and educational literature published with mistakes¹ also exist. For example, in textbooks for 8th and 9th grades, published in 2002 and 2005, applied to the educational process, there were also many such mistakes that textbooks could not be used in the educational process.

There were factors contributing to the conflict between the student and the teacher using such a textbook. If the book contains knowledge obtained on the teacher's initiative on the basis of the requirements of the state standard, it is quite natural that the fault of the textbook, which was published with mistakes, may lead to typical mistakes.

The analysis of the process of teaching graphic Sciences showed that as a result of insufficient knowledge of students of standard requirements for drafting and its preparation, insufficient development of spatial imagination in it and assimilation of the main topics of the course of drafting, in execution of drafting the following 16 typical mistakes are most often faced:

1. The same types of lines are executed in different thicknesses on the same draft, if the distance between the strokes on the dashed lines is not observed, as well as the length of the strokes;
2. Failure to comply with standard requirements when writing drafting scribbles;
3. When drafting circles, the arrow and center lines in advance are not transferred, or their uncertainty;
4. On the scale of the drafting paper, the placement of the image, that is, its component is performed inconsistently;
5. When the mass of the drafting is changed and done, instead of the actual size numbers, the fact that in the drafting is written the number values of the reduced or enlarged size;
6. The centers of the connecting arcs in the circuit and the connection points are connected without detection;
7. In cases where one or two images are enough to determine the shape of the detail, plus the appearance is drawn;

¹ Umronxujayev A. Chizmachilik. Textbooks for grades 8 and 9 of secondary schools. – T.: “O‘zbekiston” publishing house, 2002, 2005.

8. Violation of projection connections;
9. Isometric (dimetric,) incorrect drawing of the Ellipse arrows in prose;
10. In the execution of scraps, the scraping part of the detail is cut into cut without stripping, and the scraping part is also added between the cutting planes;
11. The fact that cut in half with the appearance is separated by a visible contour line;
12. Holistic shaft, spoke (kegay), the description of the longitudinal cutting stripes of the ribs of consistency;
13. The fact that the thread in the hole is incorrectly described and marked;
14. Ambiguous reflections on separable and non-separable compounds;
15. The fact that the concepts of drafting, separating the assembly line into details, are shaped;
16. Possession of skills for independent use of additional literature.

This list can be supplemented with a few more items. But the most important thing for a drafting teacher is, first of all, to prevent the typical mistakes described above.

In conclusion, we can say that it is necessary to teach a modern student not to make typical and technical mistakes in the assimilation of the subject of "Drafting". This would ensure an error-free drafting of the product and the correct reading of any draft, regardless of what profession the student will master in the future. It would also help to ensure and guarantee the becoming a professional, who is able to conduct "negotiations" in production areas, in internal and external technical relations.

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