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CHALLENGES AND SOLUTIONS TO INCREASE THE EFFICIENCY OF GRAPHIC EDUCATION ON THE BASIS OF INTERDISCIPLINE MEMBERSHIP

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ABSTRACT

The article discusses ways to improve the quality and effectiveness of graphic education through the integrated integration of specific and natural sciences in general secondary schools.

KEYWORDS: *Interdisciplinary Communication, Integration, Quality, Efficiency, Enhancement, Drawing, Graphic Knowledge, Provision, Single Graphical Layout, Classification, Membership.*

1. INTRODUCTION

Introduction of didactic approaches in pedagogical practice in the field of graphic education, such as “integration of education”, “technology of education”, “classification of images”, “interdisciplinary connection”, “interdisciplinary integration”, “technology of ensuring a single graphic order”, modern methodology of teaching drawing Effective research is being carried out to improve the graphic potential, scientific and creative abilities of students of general secondary schools, as well as to increase the effectiveness of graphic education.

The results of the research serve to form in students the necessary competencies in drawing, to reveal the essence of interdisciplinary connection, to strengthen the theoretical basis of the integrative laws of teaching science.

Interdisciplinary cooperation and integration in the organization of in-depth study of important and high-demand sciences, foreign languages, computer science, mathematics, physics, chemistry and biology on the basis of the tasks set in the Strategy of Actions for the Further Development of the Republic of Uzbekistan **[1]** the use of the approach is important.

This, in turn, is an effective technological tool to increase the level of students' mastery of the basics of general secondary education materials, didactic-illustrative materials used in the teaching of various elements of drawing, such as mathematics, physics, geography, chemistry. This factor also has a significant impact on increasing the effectiveness of graphic education provided to students based on the principle of feedback.

However, less time is devoted to the subject of drawing in general secondary schools, which leads to some shortcomings in the formation of technical knowledge and skills of students. Therefore, it should be recognized as an urgent pedagogical problem that ensuring a single graphic order in the school is one of the factors in improving the level of preparation of students from drawing, in general, the effectiveness of graphic education.

Reforms in the education system are important for the young generation to become potential and

intellectually educated. From birth to the end of his life, man strives to be knowledgeable and to increase his knowledge. Confirmation of our opinion can be found in the wise words of our thoughtful ancestors: "Seek knowledge from the cradle to the grave". The need for visual activity and graphic education in a person develops from his youth, that is, from the time of attending preschool. Then, it will gradually improve in schools and higher education institutions.

Drawing plays an important role in improving students' graphic knowledge in general secondary schools. Currently, the subject of drawing is taught in grades 8-9 for one hour per week in the prescribed manner. The drawing teacher explains to the students its practical aspects along with the theoretical foundations of the science. We know that in drawing, practical graphic work is done in explaining most of the topics. In many cases, students are unable to complete graphic work due to time constraints. As a result, students do not develop their graphic knowledge. This means that the drawing teacher needs to learn how to make the most of the time given and look for additional opportunities that can help students increase the effectiveness of their graphic learning. Such opportunities include interdisciplinary coherence and the use of integration principles.

B.S.Abdullaeva, reflecting on the importance of the integration of sciences and interdisciplinary links in the educational process, emphasizes the following: But such a problem cannot be solved within a single science. Therefore, in the theory and practice of teaching there is a tendency to combine academic disciplines, the process of combining them on the basis of interdisciplinary connections and expressing their overall content in integrated models ... to ensure interdisciplinary connections helps to deepen "**[2].**

N.J. Isakulova explains the importance of the connection of disciplines in the educational process as follows: the optimal way to organize the educational process; different subjects approach the subject of the course; the interesting side of the lesson intensifies; the amount of information learned during a session expands; it is possible to draw conclusions on various disciplines; In short, interdisciplinary interdependence serves as a pedagogical problem, principle, method, an important effective tool in improving the quality of education **[3].**

N. I Hurboev, one of the graphic scientists in the Republic of Uzbekistan, comments on the process of integration in education: After all, when we say "integration of sciences", it is necessary to understand the meaning of combining knowledge in various fields, the general tasks of scientific research, the realization of scientific goals and the solution of scientific problems.The integration of sciences takes place in two different categories for "External" and "Internal" reasons. There are three types and four levels of integration processes in the sciences, and scientific analysis shows that the use of interdisciplinary integration in the educational process is yielding effective results. Examples are the initial analysis of algebra with trigonometry and the integration of electronics and electronics with physics " **[4].**

E.O Turdikulov, R. Musurmonov on the issue of the integration of the exact and natural sciences, the following "The flow of information has increased in the XXI century, including the amount and volume of knowledge that students need to know. In this process, the need to strengthen coherence in the acquisition of fundamental knowledge by students is clearly evident. This is due to the imperfection of the system of interdependence of general education subjects taught in general secondary schools and vocational colleges on the basis of modern education. However, if the student is able to directly link the knowledge and concepts acquired during the study of academic disciplines, it becomes a thorough and solid knowledge only if he understands the commonalities and connections between them. The organization of teaching on the basis of interdisciplinary links, taking into account the membership, allows to ensure the most effective implementation of the problem. Solving interdisciplinary links is clear and natural, especially in the teaching of physics". **[5]**

One of such opportunities may be the use of other disciplines in order to strengthen the knowledge

and skills acquired in the process of mastering the basics of drawing. With this in mind, in order to determine the specificity of the use of different images in the lessons of geometry, algebra, physics, chemistry, computer science, geography and technology in grades 8-9, graphic images in the content of these subjects - tables, diagrams, planimetric images, schematic drawings, types of projections, weight analysis yielded the following result. **[6]**

For example, a total of 245 images were used in the 8th grade geometry textbook, of which 88.66% were flat planimetric images. A total of 453 images were used in the 9th grade geometry textbook, of which 81% were flat planimetric images. Other images have also been used, for example, drawings in the right-angled Cartesian coordinate system, right-angled isometry, single-plane projection of an object, etc. but they are very rare.

In the science of algebra, mainly drawings and graphs (graphs of various functions) in the Cartesian coordinate system occupy a large place. In addition, there are flat planimetric images, single-projection projection, stereometric clear images, and more. But their quantity is very small. A total of 118 images were used in the 8th grade algebra textbook and 124 in the 9th grade algebra textbook.

There are also many illustrations in physics textbooks. A total of 295 in the 8th grade textbook and 192 in the 9th grade textbook. In the 8th grade textbook, mainly schematics, perspective images, curved angle dimetric projections are more common. The most common types of images in the 9th grade textbook are diagrams, single-plane projections, and perspective images. Other types of images are also found, but to a lesser extent.

In chemistry, diagrams are among the most common images in both grade textbooks: 26.5% in 8th grade and 40.1% in 9th grade. The rest are perspective images as well as tables and diagrams. Images are also used in computer science. Among them, mostly flat planimetric images are common (35.8% and 29.0%). Schemes, perspective images, photographs, or stereometric vivid images are also rare. In geography, mainly photographic images and location maps are common. The remaining images consist of diagrams and tables. The science in which most image types are used is the science of technology.

It uses 10 different images. In this case, the projection of the product in one plane (31.0% and 45.8%), right-angled isometry and curved-angled dimetry, technological map, technical drawing, etc. In order to perform the images identified in the above analysis and to read them correctly, science teachers are required to know the rules of the State Standards used in drawing - line types, fonts, measurement rules, scales, axonometric projections, views. The first direction - this pedagogical activity is carried out in the advanced training courses for teachers of geometry, algebra, physics, chemistry, computer science, geography and technology.

The second direction should be implemented in the form of a course organized by the school drawing teacher in consultation with the school administration and conducted on a community basis. The main components of this collaboration are recommendations based on an 8-hour plan. The graphic training levels of other science teachers, as well as existing requirements and needs, will be the basis for changing the content and size of the recommended short course.The educational value of this analysis is that the use of drawings as a graphic tool in explaining the content of a subject to students provides a level of awareness of the acquired knowledge, and, of course, increases the effectiveness of graphic education. In particular, the integrated use of the rules of drawing in the lessons of geometry, algebra, physics, chemistry, computer science, geography and technology allows you to easily and thoroughly master the knowledge acquired on the basis of one subject in another. The same educational principle can be effectively applied in the teaching of other academic disciplines.

In conclusion, it should be noted that interdisciplinary interdependence provides an additional

didactic opportunity to ensure the quality and effectiveness of education not only in a particular subject, but also in all disciplines covered by integration processes. The above connection is clear evidence of this.

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