

**INCREASING THE EFFECTIVENESS OF LESSONS BY INTEGRATING THE
SUBJECTS OF DESCRIPTIVE GEOMETRY AND DRAWING IN TEACHING
STUDENTS OF FINE ARTS AND ENGINEERING GRAPHICS IN THE CONTEXT OF
THE INTERRELATION BETWEEN THEORETICAL AND PRACTICAL
KNOWLEDGE**

Jumayev Isroil Omandovlat ugli

Senior Lecturer, Department of Engineering and Computer Graphics,
Chirchik State Pedagogical University

Email: jumayev.isroil@cspu.uz Tel: +998900092793

Abstract: This article explores enhancing student engagement and learning efficiency by integrating Descriptive Geometry and Drawing to ensure the interrelation between theoretical and practical knowledge. The approach emphasizes learning through observation, hands-on practice, and critical thinking, thereby developing students' spatial imagination, reasoning, creativity, and aesthetic representation skills.

Keywords: theoretical, practical, spatial, imagination, reasoning, knowledge, cylinder, cone, sphere, integration, methodology.

In modern education, it is important that students not only memorize knowledge but also comprehend and apply it in practice. From this point of view, interdisciplinary integration serves as an effective means of developing learners' knowledge, skills, and competencies. In particular, the visual-constructive integration methodology deepens the educational process through the stages of seeing, understanding, and creating.

This article analyzes the essence, advantages, and practical applications of the visual-constructive integration method through the example of the subjects Descriptive Geometry and Drawing.

The Essence of the Methodology. Visual-constructive integration is a methodological approach based on a learner's ability to:

1. Visually perceive the studied topic (through observation);
2. Constructively represent it by drawing or modeling (through hands-on practice);
3. Integratively connect it through different subjects (through cross-disciplinary learning).

This methodology simultaneously develops not only theoretical knowledge but also spatial thinking, technical reasoning, and aesthetic taste in learners.

Interdisciplinary Integration: Descriptive Geometry and Drawing

1. The Role of Descriptive Geometry: This subject teaches students to represent real objects with mathematical accuracy and to understand the relationship between shapes and dimensions. Projection rules, intersections, and dimension markings form the foundation of technical drawing.
2. The Role of Drawing: The Drawing subject develops a student's aesthetic perception, compositional thinking, and realistic depiction skills. Through elements such as light, shadow, and volume, students transform geometric drawings into lifelike images.

How Does Visual-Constructive Integration Work?

Stage	Practical Implementation
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Visual	A visual example of a cylinder, cube, or pyramid, such as a 3D model or graphical image, is shown.
Constructive	The student draws the projection views of the shape (front, top, and side views).
Integration	The same shape is then drawn in pencil with light, shadow, and texture to give it volume.

As a result of this integration, students simultaneously acquire:

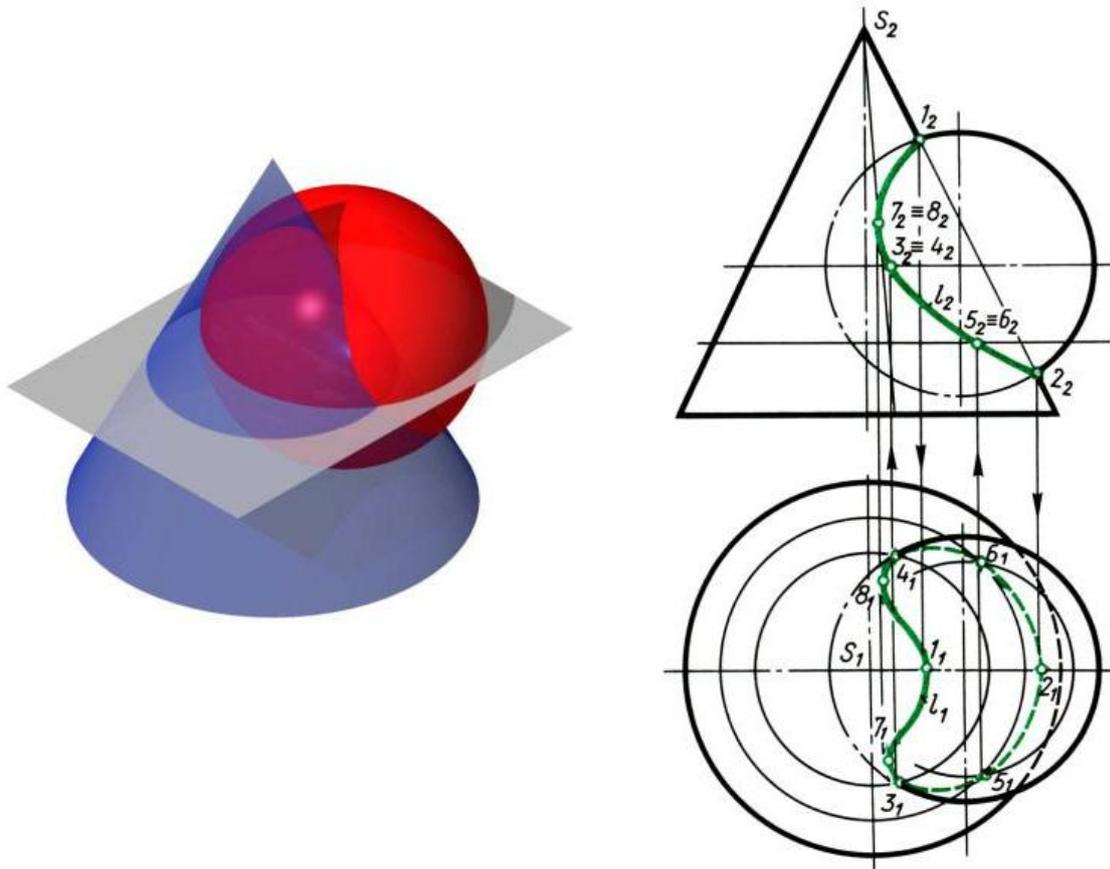
- Geometric reasoning,
- Aesthetic representation,
- Practice-oriented skills.

Practical Outcomes This methodological approach develops the following competencies:

- ✓ **Accuracy and attention** – through technical drawing in Descriptive Geometry;
- ✓ **Imagination and figurative thinking** – through volumetric drawing in Drawing;
- ✓ **Aesthetic approach** – through composition and visual expressiveness;
- ✓ **Understanding of interdisciplinary relations** – through the combination of two subjects' knowledge.

Activating students' spatial imagination and intuitive perception through the integration of theoretical and practical knowledge (at the Descriptive Geometry and Drawing stage).

“The intersection of several complex surfaces” (for example, the intersection of a sphere and a cone; see Figure 1).



The line of intersection between a cone and a sphere in Descriptive Geometry. **Figure 1**

Teaching the subjects of Descriptive Geometry and Drawing based on visual-constructive integration educates students not only in technical knowledge but also in creative thinking. This approach comprehensively develops the learner's mindset, shaping them into a broad-minded individual capable of solving real-life problems.

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