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THE METHOD OF CONVERSION OF A GEOMETRIC OBJECT INTO A 3-D IMAGE USING COMPUTER ANIMATION.

For most faculties of higher education, it has become the standard to utilize a variety of interactive and multimedia devices as a teaching aid. This type of digital technology is central in integrating multiple disciplines from various fields of knowledge into a single unified training process

Unlike computer graphics, computer animation combines the concepts of modelling and movement into one. Animation serves as a link between different age groups, and is therefore able to appeal to both students and teachers.

The possibilities of modern computer technologies and multimedia enable the creation of an animated film, which visually forms a 3-D image of a geometric object or a step-by-step process of its creation.

Thus, as a result of the coordinated process of several perception analyzers the 3-D image of the object developed, and it substantially facilitates and accelerates the training process and understanding of the teaching material by students.

In teaching, the following types of education visualization are distinguished:

- models (real geometric solids or their 3-D equivalents);
- graphic presentations (sketches, drawings)

It has been noted that the constructive activity of students is even more successful when more effort is put into developing their spatial imagination and creative thinking. However, several problems arise with the use of visual material as a learning aid. It is important to use very particular visual material that also includes a psychological aspect which illustrates the objects development from the general to the specific, from the whole to the parts.

In practice, the creation of a 3D image of the geometrical object, or the spatial thinking system in students, can be created through animation in courses on engineering graphics. With the help of multimedia technology the training process allows for the understanding of the formation process of these models.

Thus, the organization of a formation process of a 3D image of a geometric object by means of computer animation can consist of the following stages that are presented in figure1.

Animation helps students not only create a spatial image but to also understand the both the internal and external features of an objects structure. The scheme represents additional stages to the traditional formation of a spatial image: dynamic animation review of the model and animation of visual sequence of steps in the creation of a geometric object that enables to make logical transition from the real model to the drawing.

Computer animation and three-dimensional graphics as auxiliary means facilitate understanding of the structure of a three-dimensional body and provide an opportunity to create to realistic visualization with textures and illumination. As a result computer animation is a way of gaining new knowledge, intensifies the process of understanding and effective realization of the didactic principle of visualization in training.

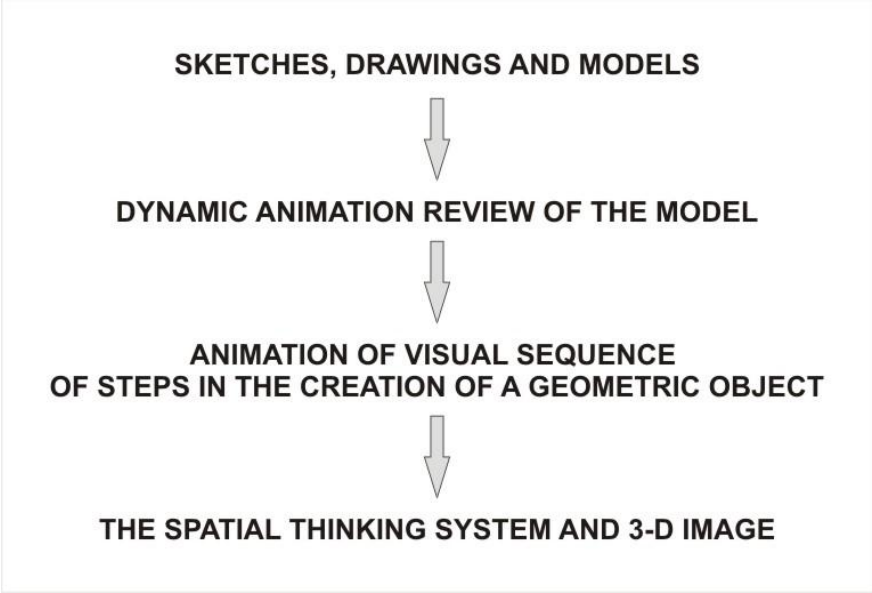

Fig. 1 The organization of a formation process of a 3D image
of a geometric object by means of computer animation