

MULTIMEDIA IN ENGINEERING GRAPHICS

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Abstract. The lecturers should take care of not only the content of their teaching but also of their ways of presentations. Especially currently when we are witness of continuously changing prices of equipment and software as well as developing computer aided technologies. Authors have proved that multimedia methods are more effective and interesting than the traditional methods of teaching.

Keywords: engineering graphics, multimedia, AutoCAD,

1. Introduction

Even for students studying at universities, the fundamentals of engineering graphics are often more difficult than any other subject in the curriculum.

Many of the traditional instructional design/drafting tools (e.g., still image transparencies, chalkboards with large manual drawing instruments) offer limited utility when used to teach difficult and complex concepts. One major limitation of traditional instruction is the problem of presenting three-dimensional (3-D) spatial information in a two-dimensional (2-D) format. Another difficulty is the time required to present complex concepts and solve complicated drafting problems by using large-format, manual-drawing instruments on the chalkboard.

By changing the teaching content from static to dynamic, multimedia increased teaching vitality, activated class atmosphere. It can also mobilize students' activity; get a better teaching effect in short time [1-7].

2. Multimedia and engineering graphics

In the traditional way of engineering graphics teaching, the most difficult task for the teacher is to explain the spatial relationship among planes and objects. It is hard to illustrate the location and form of 3D objects by just drawing on the blackboard or showing wooden models. Students always get confused.

The Department of Engineering Graphics has realized the modernization of teaching contents and methods. Teachers in the department adopted the assistant of multimedia computer software.

Multimedia presented classical engineering graphics topics using a combination of animation, audio description, and interactive exercises.

Many software products are available to produce instructional multimedia. We can create slides with text, tables, diagrams, graphs, pictures, drafts prepared in the environment of Power Point or load its from Word, Excel, Corel, AutoCAD and other (Fig. 1 and Fig. 2). Also we can employ sounds effect, video clip.

There are creating presentations of lectures (set of slides) with using MS Power Point program, which will be demonstrate in the screen with personal computer and digital projector during the lecture.

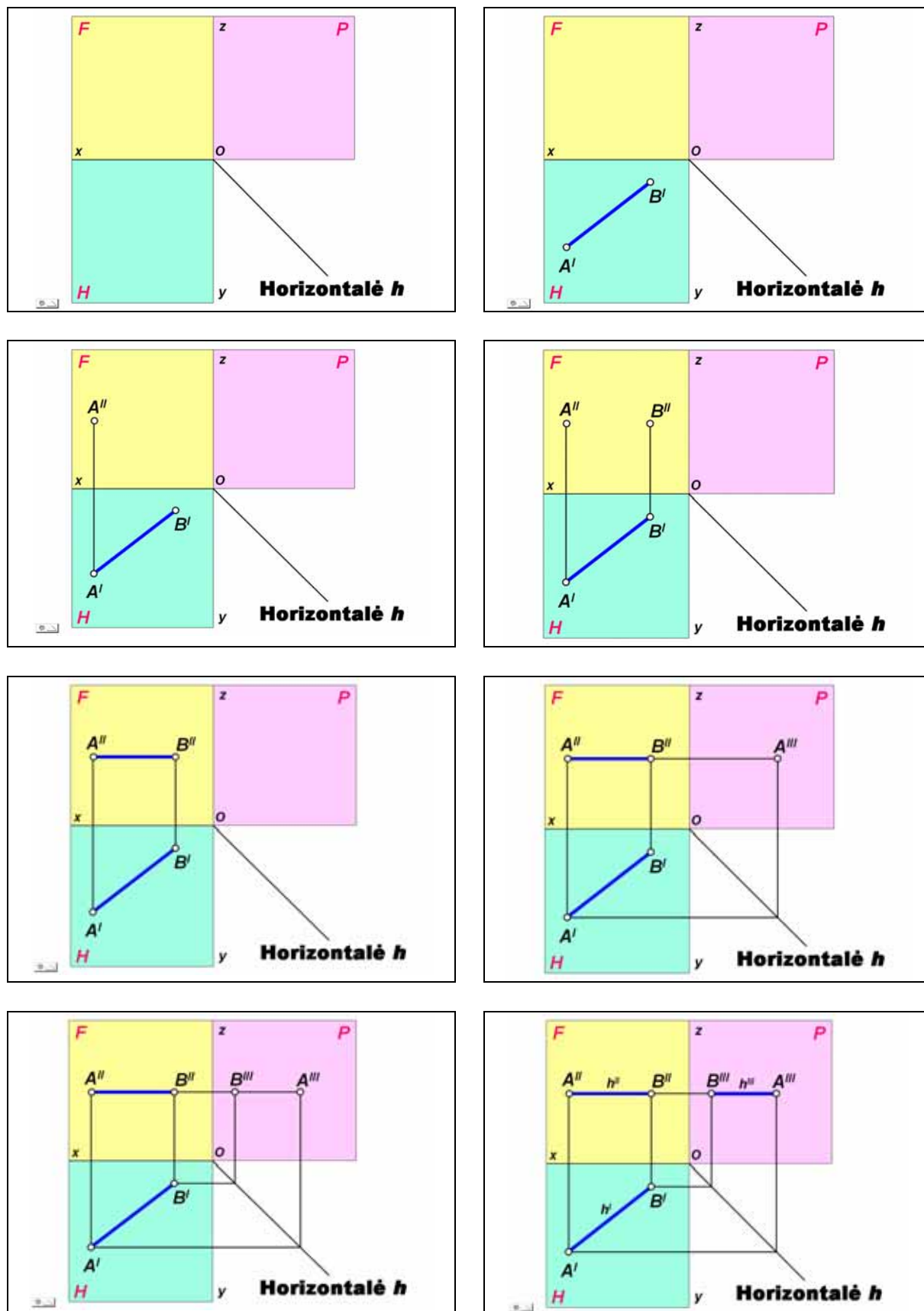


Figure 1: Fragments of the animated draft

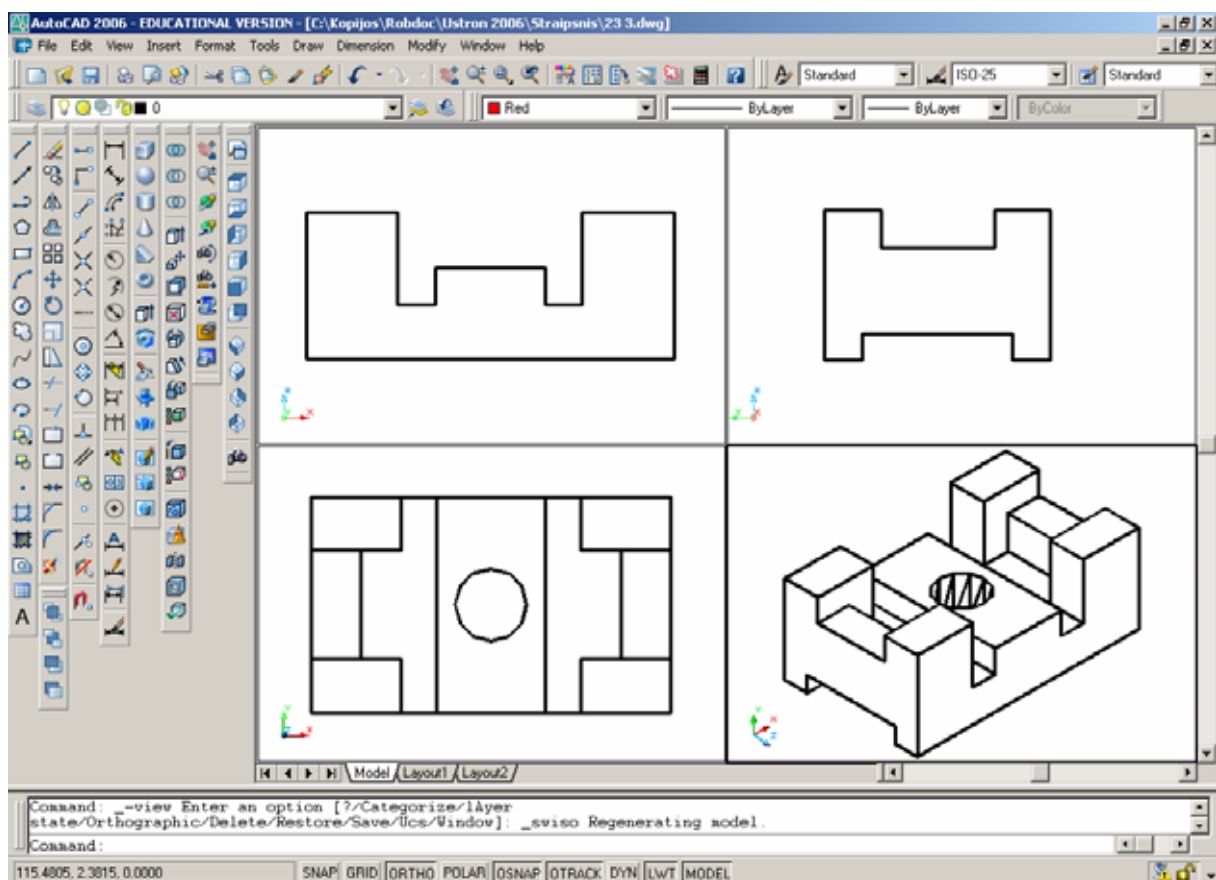
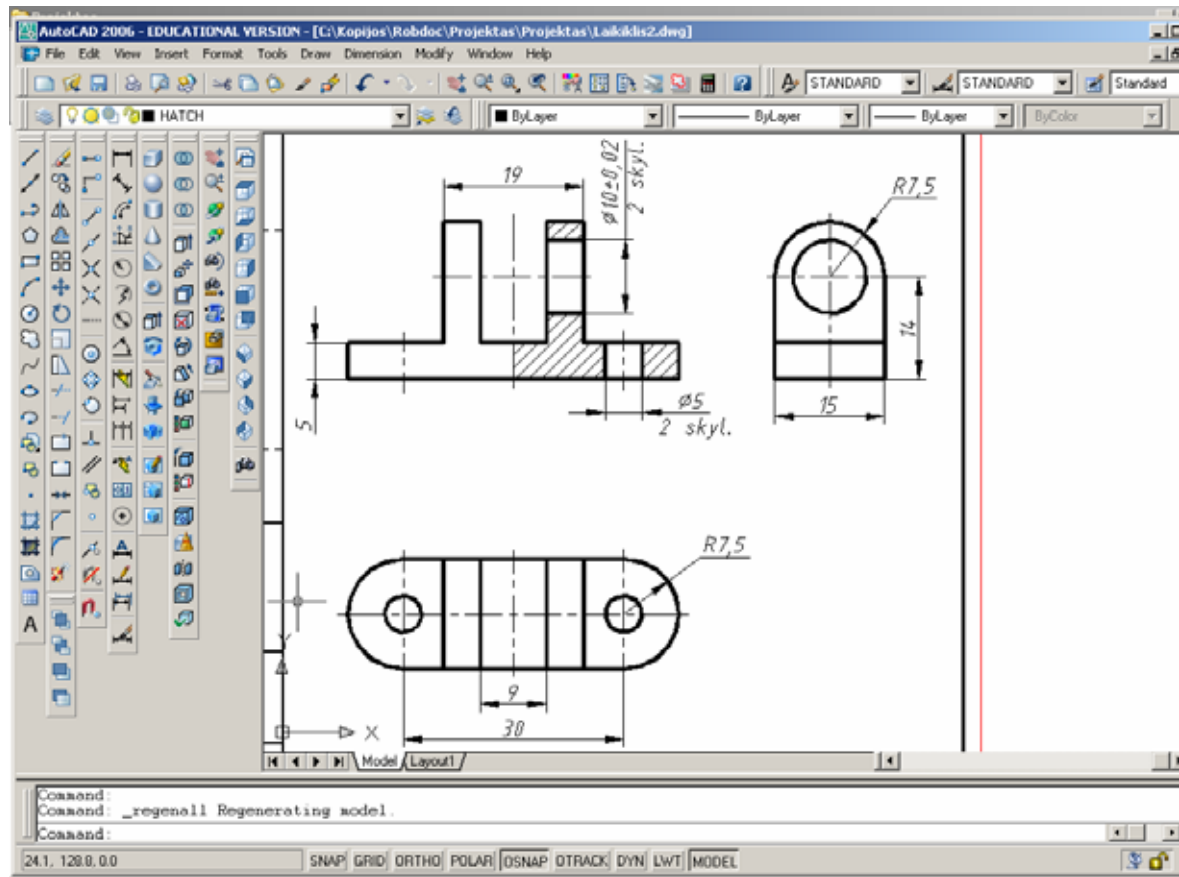


Figure 2: Making the orthogonal projection (using AutoCAD program)

Multimedia assisted in visualizing the principles of orthogonal projection and sectioning in engineering drawing, geometric dimensioning and tolerancing, the geometric relationships involved in descriptive geometry, and other engineering graphics topics.

One of the most promising and positive features of multimedia-based instruction has to do with capturing and maintaining students attention.

Results of surveys indicate that the new presentation media was extremely well received and helped with the understanding of the course material. The multimedia-based instruction is more enjoyable than the traditional instruction.

3. Conclusion

As multimedia-based materials are developed and as existing materials are used, it will be critically important to conduct research to ascertain which aspects, techniques, and models are most effective and efficient.

Teachers must rationally arrange the use of multimedia education in classes.

There is the opportunity to present more information comparison with traditional teaching methods during the lecture. It is very important if we take into account the quantity of hours for study of engineering graphics. The lecture is more dynamic. The lecturer does not waste time by drawing with chalk on the board. All his actions on the board are removed to the slides.

Compared with the conventional teaching material, the multimedia has more capacity, and can store all sorts of data. It can extend students knowledge, support various studying modes.

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MULTIMEDIA W GRAFICE INŻYNIERSKIEJ

Wykładowcy grafiki inżynierskiej powinni troszczyć się nie tylko o treści nauczania ale także o sposób ich prezentacji. Zwłaszcza, że jesteśmy świadkami ciągle zmniejszających się cen sprzętu i oprogramowania oraz rozwoju technologii wspomaganych komputerowo. Autorzy wykazują, że multimedialne metody nauczania są bardziej efektywne i interesujące dla studentów niż tradycyjne.