253

 The use of an electronic textbook in lectures frees the lecturer from drawing, solving a problem and writing a solution algorithm. And no drawing made by the lecturer on the \* board can surpass the multimedia computer animation of solving the problem. In the electronic textbook, the solution to each problem is shown in motion. You can stop the animation at any time or return to some incomprehensible place and repeat the decision process. The solution of the problem in the electronic textbook is carried out visually, in dynamics, in axonometry, which provides invaluable assistance in the development of spatial thinking of students.

 With the help of an electronic textbook, it is easy to solve\* difficulties that often arise in lectures, such as: the limitation of the whiteboard, as a result of which the solution of the problem goes beyond the surface used; the mutual arrangement of geometric shapes specified by the condition of the problem, to achieve a more visual course and result of the solution.

 Andthe use of an electronic textbook in the training system when studying descriptive geometry provides equal video conditions for students. It is these equal video terms in an arbitrarily large audience that contribute to the optimization of the subject organizational activity of students in the study of descriptive geometry.

 The information to be communicated to students during the lecture should be carefully selected and comprehensively thought out by the lecturer. There should be nothing superfluous and fuzzy in the lecture. The use of thoughtful and developed animations excludes the introduction of random, secondary, and sometimes superfluous information into the lecture.

 In the e-learning manual, all voluminous solutions can be

254

 voiced, i.e. there is a simultaneous impact on the visual and auditory nerve of the student, which allows you to double the impact on absorption.

 The electronic training manual gives the opportunity to interrupt, and repeat the solution of the problem at any time, as many times as you like. This makes it easier for students to understand and assimilate the learning material.

 The use of an electronic textbook in lectures allows not only to comply with the didactic requirements\* for the lecture, but also helps to enrich such requirements as: clarity, expressiveness, accessibility, correctness of speech when presenting educational material.

 The electronic textbook most fully implements its purpose with the individual work of a student who missed a lecture or did not master the content of the educational material. The lecturer is freed from the need to repeat the entire content of the lecture to one student. The electronic textbook, as a program given to the student in his individual activities, partially replaces the teacher, since the teacher has already invested all his intended control actions in the manual. With the help of an electronic textbook, the student is able to independently master the lecture material, since the manual should provide for variations in the process of mastering the material depending on the individuality of the student, because in the manual the teacher, in fact, reflects the upcoming mental activity of the student.

 In addition, the student's personal work with an electronic textbook creates an environment that best suits the student's individual characteristics. The pace of communication of lecture material corresponds to the speed of perception of the trainee. And this is very important, because the discrepancy of these values can lead to the fact that in one case the student does not have time to perceive information and quickly gets tired, in the other - begins to be distracted and loses interest in work.

 In hands-on labs, the e-learning manual can

255

be used in: updating the educational material in order to apply the knowledge acquired by students in lectures and as a result of independent work with textbooks and notes.

 In a practical lesson, solving the problems contained in the e-learning manual can be used: how; c. individual work, and in frontal. Individual training: can be implemented if there is a worker; computer; places for each student. Frontal work can be implemented, if any; A classroom video projector screen that replaces the chalkboard.

 In the presence of the listed technical requirements, practical exercises are conducted in the following logic:

- The teacher does not need to dictate. students condition the task, perform a drawing, and (with the presence of an individual computer; space for each) students do not need to transfer the condition and drawing of the task to themselves in a notebook: everything is presented on a computer monitor. Thus, involuntary loss of teaching time to perform homogeneous operations is eliminated, significantly saved, learning time that can be used to develop memory and thinking;

 – the possibility of irrational arrangement of figures given according to the condition of the problem, and hence cases of correct, but inconspicuous private solution, the explanation of which also takes some time, is completely excluded. The graphic representation of the condition of the problem will not differ from the original presented by the teacher on the screen of the video projector, which means that the solution of the problem should coincide with the solution on the screen, which helps to carry out self-verification;

 – the individual nature of working with the computer prevents cheating, i.e. reproduction of the already known;

256

 - determining the order of work and the pace of educational activity by the student himself allows him to feel comfortable when performing educational activities.

 The use of the electronic textbook provides systematic and systematic development of students, based on maximum activity and independence, the development of spatial thinking of students, and also allows you to significantly save study time, allows for a short period of time, in an individual mode and. at an individual pace to explain an unclear fragment or block of information on the topic. A student who turns to a computer textbook for advice, in an atmosphere of psychological emancipation, can independently review the theory at a pace corresponding to his individual characteristics. If necessary, the student can return to the theory as many times as he wants, without expressing any displeasure on the part of the teacher about the student's lack of understanding of a particular issue. The electronic textbook is designed not only for the acquisition and systematization of knowledge, but also for the development of creative thinking of students.

 In our research, we came to the conclusion that replacing the "live" interaction of the teacher and students with the interaction of the student with the computer is dangerous, it is necessary to look for a reasonable combination of means of teaching students: computer and traditionally developed in the study of descriptive geometry, therefore, in addition to the electronic textbook and computer tests, the developed educational methodical complex includes a workbook (Appendix 12) on paper, which includes drawings, conditions and initial data for solving problems.