PRINCIPLES OF THE PROGRAMMED TEACHING IN VIRTUAL EDUCATION OF ENGINEERING

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Abstract. In our days in place of programmed education system it is enough it is successfully possible to utilize computers with the conformable computer programs. By a modern computer technique it is possible to create from the simplest linear to the branching with the high degree of fork program. It is necessary to use in descriptive geometry: and linear programs – the decision of the most difficult tasks of the linear program is necessary to be done on a certain algorithm; and branching programs – as there are typical mistakes in judgments of students. Method of choice the answer in descriptive geometry it is possible to use for control the rightness of perception of material, asking about the represented draft. The student before answering, has to present how this draft looks like in space, together with it development of students spatial perception will be activated. And in the cases when he will not be ready for next control, a task will make him present an object in space. Realization the principle of programmed teaching in the computer program is the next step in his development, as a student can not see a right answer, can not in advance read an explaining text, and it is necessary to think about what is writing. Using the main principles of programmed teaching in virtual education, we wood return that time, when conduction classes with 2×45 minutes of allotted time, developed in to 45 – minute class. In descriptive geometry in virtual teaching it is possible to conduct lectures for which now allotted time is too little, but practical works have to be done internally.

Key words: descriptive geometry, programmed education, cluster analyze, factor analyze.

Introduction

The lack of corresponding literature troubles the students to master the teaching material well. The contents of modern text-books do not provide operating the process of mastering knowledge, skills, particularly mastering the course independently. Using at lectures and practical classes methods of presenting the teaching material, the learning process of many students is relatively passive.

More attention should be paid to raising the independent learning student's role in teaching/ learning process.

All these drawbacks of teaching/learning process delay the successful mastering the course of descriptive geometry. To avoid this problem it is necessary to clear up what themes are what themes are mastered the worst and to create such teaching aids which could make this process more individual, more active to develop student's spatial perception.

The aim of research:

- to evaluate the possibilities of using programmed teaching principles in virtual education;
- to clear up and mutually compare the levels of understanding descriptive geometry by the full time students.

The methods of research

To create an effective teaching aid first of all it is necessary to clear up what themes are mastered by students the worst. So there has been carried out survey among the students, which helped to clear up what material seemed to be the most difficult for definite groups of students.

For analysis there has been chooses cluster analysis and factor analysis out of the statistical group of method, which allows to questionnaire there has been carried out a survey among the students of three educational programs: a program of Landscape Architecture and Planning, a program of Environment and Water Management – Faculty of Rural engineering and a program of motor transport – Faculty of Engineering to clear up what difficulties have appeared among the students to understand definite parts of descriptive geometry.

51 students had to give a self – assessment about understanding 45 themes of descriptive geometry in the process of its mastering. There has been held a factor analysis because of necessity to reduce a member of variables and as well to define their correlative structure.

Using up-to-date computer technique it is possible to create from the simple linear program to the branching one with the high degree of fork program.

Choosing the kind of teaching program

Most teachers and scientists consider that the branching program better fits for the individualization of teaching process and provides better adverse effect then the linear program, the structure of students particularly is uneven and teaching material is difficult (Bespalko, 1964).

Nevertheless, to work out the branching programs are more difficult and their volume is considerably more than the linear ones. Mentioned drawbacks are expressed in teaching material of descriptive character. In this case the linear program can be more useful, especially with supplements, which provide various deepness of learning material perception if the structure of students is uneven (Bespalko, 1964).

V. Bespalko and M. Rozenberg consider the combined or mixed programs to be very perspective; programming the teaching material according to its specific character and using both the linear and branching programs, if while mastering this material typical mistakes or alternative thoughts, ideas appear in students' judgments. V. Bespalko recommends to program according to the teaching material, in which there is stable and definite judgment logic, undoubtedly leads to the educational aim, to the linear program (Bespalko, 1964).

In descriptive geometry it is necessary to utilize both linear programs to solve the most difficult task of linear program according to a certain algorithm and branching programs – as there are typical mistakes in students' judgments.

The width of teaching material parts

One of the most important problems of programmed teaching is determination which is devoted much attentions in literature. V. Bespalko points to that a part of teaching material is a methodical category, so it is wrong to characterize its meaning by word, sentence or number of pages V. Bespalko considers, that a part of teaching material should involve one or two new explanations of meanings, which create logically completed generalization of thoughts, as well the tasks to master necessary skills based on knowledge included into the part of teaching material and special questions to control and self-control the mastering of teaching material (Bespalko, 1964).

Methods of choice the answer

The supporters of method to choose the answer, in their turn, point to that this method suits for "choosing the situation" in which very often there is a man who has to take a concrete decision. Taking the decision requests to analyses the given variants, to compare possible results and quickly to take the right solution. So in teaching process it is useful, in some cases to put the students in front of choosing the situation (Vololin, 1964).

The method of choice the answer in descriptive geometry can be used to control the correctness of perception the material giving questions about the represented drawing. A student, before answering, obligatory has to imagine how this drawing looks like in the space, so student's spatial imagination will be activated together with it. In the case, he is not ready to next in – turn control; a task makes him imagine an object in the space.

Realization the principle the programmed teaching in computer program is a step in his development, because a student can not read an explanatory text earlier, so he has to think himself what he is writing. As well, it is not necessary to trouble about the big amount of pages, which appear while programming a textbook.

The meaning of programmed teaching and its place in teaching – learning process

Exact subjects with their definite logic and building structure suite well for programming. So these subjects should be mastered mainly using the method of programmed teaching (Bespalko, 1964).

On the contrary in human subjects the main role belongs to the teacher. Using the main principles of programmed teaching in virtual education, we wood return that time, when conduction classes with 2×45 minutes of allotted time, developed in to 45 – minute class. In descriptive geometry in virtual teaching it is possible to conduct lectures for which now allotted time is too little, but practical works have to be done internally.

Conclusions

To prepare the specialist of one and the some level accorded to the three teaching programs it is necessary to work most of all at program improvement for the students of Environment and Water Management, because in the results of data it can be seen that these student's spatial imagination isn't developed so well, as the spatial imagination of motor transport program students or Landscape Architecture and planning program students.

For the students of motor transport program it is necessary to work out a special teaching aid to solve task using different methods.

For the students of Landscape Architecture and planning program it is necessary to work out a teaching aid how to define the split between surface and flatness. It would be important to work out such auxiliary teaching aids using the main principles of programmed teaching.

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